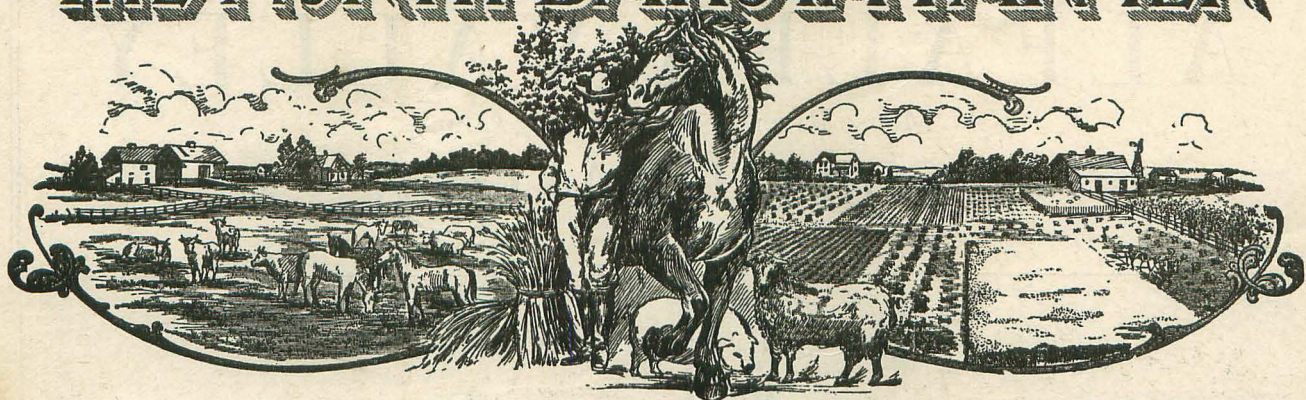


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# THE NORTH DAKOTA FARMER



"THE NORTH DAKOTA FARMER FOR NORTH DAKOTA FARMERS"

Vol. 15 No. 6

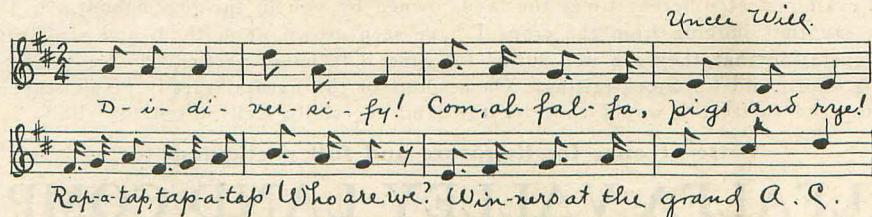
Lisbon, North Dakota, December 15, 1913

50 Cents A Year

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C. B. Waldron, of the North Dakota Agricultural College, writes:

"I have examined at different times the lands owned by you in the region South of Towner and can say that judging from the crops I have seen grown upon them and also from the native vegetation that they are well suited for general farming, particularly for the growing of Alfalfa, Corn and for Stock-raising. On account of the natural supply of moisture a few feet below the surface, I would consider the land especially well suited for alfalfa."

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TOWNER, NORTH DAKOTA



# THE NORTH DAKOTA FARMER

Vol. 15, No. 6

LISBON N. D., DECEMBER 15, 1913

50 Cents a Year

## CO-OPERATION

### Article Two

By President J. H. Worst, N. D. A. C.

**I**N OCTOBER I wrote relative to farmers' co-operating in harvesting, threshing, etc., in order to avoid the annoyance of depending so exclusively upon inefficient transient labor. But there are other considerations besides labor. The necessary money or credit to stock the farm and to purchase machinery and other equipment for development purposes can best be obtained by farmers' co-operating to help each other. The breeding of livestock gradually eliminates the farmers' dependence upon transient help, but it takes money to purchase livestock. To wait until the debts are paid and surplus money is made for the purchase of farm animals is not satisfactory. The wait is too long and the chances of sufficiently prospering by raising small grains in order to get a start in livestock is too precarious to be relied upon.

To mortgage the farm and borrow money at rates ranging from eight to twelve per cent is really making money for the money lender; at any rate, farmers can seldom afford to borrow money at anything like the above rates.

And yet, without co-operation, it is the best they can do. "Individualism" is a good thing to cherish in some respects, but it does not pay in the farming business. A farmer working singly is at the mercy of powerful forces, any one of which is able to crush him, or at least make him their servant, either temporarily or for life.

On the other hand, farmers have a right to obtain money at interest rates not in excess of 6%, and if they were to throw away their foolish individualism and work together and for each other, they should command money for development purposes at 5½%, if not as low as 5%. They should be able to do this without injuring any other interest save the selfish interest of those who, in many in-

stances, can fairly be denominated "money sharks."

In European countries, they have their agricultural banks where money deposited by farmers draws a low rate of interest for the time it is on deposit and where credit is given to farmers at a slightly higher rate than is received for deposit money—seldom exceeding 5½ or 6%.

Over there, farmers seem to take some pride in their calling and hence use their deposit money, as well as their credit, to improve and dignify the business of farming,—**their business**—instead of permitting it to be controlled by alien interests. They help each other.

They also co-operate by organizing selling agencies as well as purchasing agencies. As a result, they receive practically the world's price for their commodities and pay the same for their necessities instead of acting singly and being compelled to accept the middlemen's offer. Generally speaking, about one-half of one per cent commission is charged for disposing of their farm products and as much, or rather as small, commission is charged for the purchases they are obliged to make. This, of course, is exclusive of cost of preparation of the raw material for the market, and a small per cent, usually 5%, that is set aside for repairs and depreciation of the factory plants. But as the farmers, themselves, quite generally own the plants and do their own manufacturing, and also employ their own agents for marketing their products, the advantage they enjoy over their American "brethren of the soil" is quite apparent. Here the farmer gets approximately 45 cents out of the dollar which the consumer pays for his products; the other 55 cents goes to a well-organized and not ever-conscientious army of middlemen.

No man working singly can accomplish a change that will even approach the "square deal." However, by co-operation, farmers can secure the "square deal," but in no other way.

There is always a prejudice against patterning after European methods, but in the last analysis, it will generally be found that the prejudice is fostered by those who profit directly, both politically and financially, by the fact that farmers do not co-operate.

There are many farmers in need of cheaper money for development purposes. This can best be obtained by uniting their farms in one association and by obtaining credit on the whole acreage rather than for each man to raise money on his individual property.

That there are big profits in banking, the fact that there are nearly 1000 banks in the state, all making from 10 to 60 per cent dividends, annually, should be sufficient evidence. These dividends are made, very largely, out of farmers' money on deposit, for safe keeping, but for which no interest is paid. This is perfectly legitimate, on the part of bankers. No one questions this nor attaches any blame to them, but farmers would do far better, for their business and for the country, to imitate the farmers of the old world by co-operating in such a way as to build themselves and their profession into a co-operative structure and be more independent. This can be done by utilizing, for co-operative purposes, the money that now accrues from their deposits and produces fat dividends for from one to three banks in every little village of the state. In other words, the farmers should enjoy, to the fullest extent, the wealth which they produce.

By co-operation in dairying, Holland and Denmark farmers have grown wealthy. The same may be said of those engaged in producing poultry and poultry products, hogs and hog products, etc.; whereas, as long as they pursued the "individual" plan, as Americans do, they could barely make a living. In fact, they were fairly starved into co-operation, but co-operation has made them among the most prosperous farmers of the world. We, here in the Northwest, do not relish being starved into



protecting our agricultural interests, yet what with our waste and our lack of co-operation, that condition may not be as far away as we may imagine.

Under any circumstances, co-operation is a safe, dignified and logical method of procedure wherever men are mutually interested in any business or profession. All other forms of productive industry recognize the advantage of co-operation and **co-operate**. The farmer is the single exception and hence is the prey alike of decent and mercenary interests—the latter not by any means being exceptional.

No particular, general, universal remedy is pointed out nor likely soon to be pointed out. The thing that must precede organization is **attitude of mind**. When farmers get the proper attitude of mind; when they are willing to throw away their prejudices and trust each other as they now trust those who live off them, then, and not till then, will farmers cease to be the victims of organizations who fix the price of what they sell and what they buy, as well as fix the amount of security they shall give and the rate of interest they shall pay for borrowed money.

It required years of determined effort, attended by many bitter discouragements, to overcome Irish prejudice against every form of co-operation. The persistence of such men as Sir Horace Plunkett and R. A. Anderson, to say nothing of their patriotism, finally won. They were opposed by politicians, churchmen, business men, as well as by the farmers themselves.

The affiliated agricultural co-operative societies of Ireland, 900 in number, however, have revolutionized farming in that little island, just as co-operation has revolutionized agriculture in Denmark.

"At the present time, one-sixth of the farmers of Ireland are in it (Co-operative Societies). Forty-five thousand farmers contribute to the co-operative creameries, which produce \$10,000,000 worth of butter yearly. Two hundred and thirty-seven agricultural credit societies loan a quarter of a million dollars annually to men who have little or no security to offer other than their character. One hundred and sixty-eight agricultural co-operative societies buy, at wholesale prices, seed, fertilizers, machinery, groceries, and almost every imaginable thing needed by farmers, the bulk of the business being about two-thirds of a million dollars annually."

Agriculture, in North Dakota, is bound to become more and more specialized as farmers break away from all-wheat farming. Dairying,

beef-cattle, horses, hogs, poultry, potatoes, seed grain, etc. will be carried on more or less as specialties and each group of farmers thus having mutual interests will profit by co-operating. The all-grain farmers, while they last, will also need to co-operate. All these societies, by affiliation, naturally will constitute a great agricultural organization that will exert its united influence to secure for its membership fair prices and reasonable credit. No great industry can prosper if it does not manage its own business from beginning to end. It is well enough to be trustful, but not to be too trustful where selfish human nature is given a chance to get in its work.

### THE ORGANIZATION OF AMERICAN AGRICULTURE

By David F. Houston, Secy. Agri.

(Continued from last issue)

#### Farmer Does not Demand Class Credit Legislation

One thing is clear, the schemes that are multiplying which conceive the farmer to be a mendicant and a subject for unique and special legislation may be at once condemned. The American farmer does not need or desire to be classed with those foreign people who are just emerging from a condition of serfdom and tutelage. He asks no opportunity that is not afforded to every American citizen; he asks for no legislation which shall give him credit on easier terms than his brother mechanic or his professional friend or his merchant may secure it. But he does ask to be assisted in creating conditions and machinery which shall enable him on a similar credit foundation to secure his money at the same rates as any other class in the community. This, and this alone, it seems to me is all that he asks and is nothing less than he deserves. I am not impressed with the wisdom and the justice of proposals that would take the money of all the people thru bonds or other devices and lend it to the farmers or to any other class at a rate of interest lower than the economic conditions would normally require and at a rate of interest lower than that at which other classes are securing their capital. This would be special legislation of a particularly odious type, and no new excursions in this direction would be palatable when we are engaged in the gigantic task of resorting the simple rule of equity.

In the field of marketing, there is also danger that pressure will be brought to bear upon us to act everywhere before we are prepared to act intelligently anywhere. Not that assistance can not be given here and

there and not that the Department is not furnishing and will not furnish information of great practical value to individuals and communities. The Department has arranged its marketing investigations under five important subdivisions:

First. Marketing Surveys, Methods and Costs, including especially available market supplies in given production areas, demand at consuming centers, cold and other storages, marketing systems and prices, and costs of wholesale and retail distribution of farm products.

Second. Transportation and Storage Problems, having in mind the elimination of waste and the study of problems connected with surplus market supplies, terminal and transfer facilities, including freight congestion, car supply, deterioration in transit, extension of the practice of precooling of perishable and other special services.

Third. City Marketing and Distribution Investigations, involving a study of the uses and limitations of farmers' municipal, wholesale and retail market houses, systems of city distribution, the promotion of direct dealing between producers and consumers by parcel post, express and freight.

Fourth. Study and Promulgation of Market Grades and Standards; a consideration of sizes and suitability of packages and containers, methods of preparation of perishable products and the ultimate establishment, so far as practicable, of official market grades and standards for farm products.

Finally. Co-operative Production and Marketing Investigations. The Department has done much work in this field thru various agencies. It has established standard cotton grades and has practically completed its standard corn grades. It has given much attention to the cold storage problems, to the packing and handling of perishable fruits. It is convinced, as you are, of the existing chaos and of the consequent wastes—waste resulting from faults on the part of the farmer in the growing and handling of his products; waste resulting from the machinery of distribution, including physical equipment and physical handling; waste resulting from the manipulation of those middlemen who perform no clearly useful and necessary service, and waste resulting from ignorance on the part of the consumer and of the producer of the character of the product which is placed on the market. The producer of **any product** is entitled to receive an exact price for the specific product which he offers, and the consumer is entitled to re-



ceive just the commodity he thinks he is paying for.

A failure in either direction involves clear injustice and greatly hampers production and crop improvement. Let me illustrate by reference to two vitally important crops—cotton and corn.

Uniform standards thruout the cotton belt would result in the rapid building up of a body of common knowledge on the part of the farmers, students in agricultural colleges and others interested in the universal set of grades.

Practically the same results would follow and the same evils would be removed if standard grades for corn were universally adopted. Definite standards for the grading of commercial corn and the uniform application of such standards in all markets under suitable Government supervision

who markets dry corn of good quality will be in a position to demand a premium for such corn. It will not be necessary for him to accept a No. 4 price for corn which he sells under a grade designation of No. 3. He will then have some encouragement to exercise greater care in the harvesting, storing, and marketing of his corn; he can likewise ascertain in advance of sale with a fair degree of accuracy the grade of his corn while in the crib and thus not market it until it is sufficiently dry to meet the requirements of a higher grade.

#### -Need for Co-operative Action

Several things stand out very clearly at this stage of our knowledge. All this waste must be eliminated. In simple justice, the producer must be paid specifically for what he produces and for nothing else, and the consumer must receive what he thinks he pur-

some particular product which is more or less capable of being standardized and the object must be to overcome some specific difficulty. It goes without saying that the members of the co-operative society must be those who are bonafide producers and that every approach of the exploiter must be aggressively repelled.

Here again the need is for information. Types of organizations which operate successfully abroad can not necessarily be imported into this country without modification. A form helpful for one undertaking is not necessarily the best for another, and one successful in one community under certain conditions can not necessarily be expected to succeed under other conditions in another community. There are many facts to be ascertained. We are aggressively conducting a survey; we desire to know and to estimate the various sorts of enterprises afoot to be able to tell the people on what principles they may organize and for what purposes.

#### Rural Organization

This brings us sharply up against the whole problem of the organization of rural life. That rural life should be organized and can be organized is clear; various agencies are definitely attacking its intellectual side. We are effectively studying rural physical improvements, especially good roads. It realizes that good country roads are prerequisite for many important rural undertakings. They are prerequisite for better marketing, for better schools, for comfortable living and for the promotion of social life.

There is obvious need of organization for sanitary purposes and for social development. Whether all these shall come thru definite attack of private or public agencies, or as by-products, makes no difference; they must come. We can no longer entertain the notion that rural life shall remain isolated, disjointed and unorganized. Its organization is a national, economic and social necessity. It is more difficult to organize a scattered rural population than a concentrated one, but the great need is to give the rural population at least approximately the primary advantages which the town enjoys. The town is organization, and because of its organization and of its consequent advantages, it has tended to attract to it the most ambitious youth of the country. The task of rural organization is difficult, but as the greatest educator of America has said: "The difficulty of a task constitutes no reason for declining it." And in this way lies the largest promise for national upbuilding and stability.



Stock Judging--The Dairy and Beef Types. Prof. Thompson demonstrating to the 1913 Boys' and Girls' Institute at the A. C.

would be of direct value to our corn growers, in that such standardization would encourage the marketing of dry corn of better quality. Heretofore it has been the common practice to pay practically the same price for all corn delivered at country stations regardless of its water content or of its soundness. Farmers have not been slow to grasp the situation, and under such a system have naturally made but little effort to market corn in a dry and sound condition. The system has placed a premium on poor and careless farming at the expense of farm methods and practices.

Under a definite system of grading and the elimination of such terms as "reasonably dry" and "reasonably clean" the farmer as well as the grain dealer will be able to know and fully understand the requirements for the different grades. With a knowledge of the grade requirements the farmer

chases and must be willing to pay a fair price for a good product. It is absolutely clear that before the problems of rural credit and of marketing, the individual farmer, acting alone, is helpless. Nothing less than concerted action will suffice. Co-operation is absolutely essential. The same business sense and the same organizing genius which have placed this nation in the front rank in industry must be invoked for agriculture.

I am not advocating an organization which shall attempt to establish a closed market and to fix prices. I am advocating simply an economic arrangement which will facilitate production and enable the producer to find the readiest and best market for his product and the consumer to receive his supplies at the lowest cost. Nor am I thinking of concerted effort which shall proceed from above downward. It must associate itself with



## TWO-ROWED BARLEY FOR WESTERN NORTH DAKOTA

L. R. Waldron, Dickinson, N. D.

North Dakota is an important barley growing state and the barley grown is extensively used for feeding. The major portion of the barley is grown in the eastern portion of the state, but the importance of the crop is increasing in the western portion. Only a little of the hulless barley is grown in the state. This is well for the hulless barley is a poor yielder and it does not pay to grow it. Most of the barley grown in the state is the six-rowed; the Oderbrucker and Manchuria are popular varieties. The six-rowed varieties are adapted for certain portions of the state, but it is likely that over the larger area of the state they do not yield so well as some of the 2-rowed barleys.

We still occasionally hear complaints that the experiment stations are a burden to the public, but if there is any just cause for such complaint, the trouble may not always lie with the stations. It is likely that in the comparatively small feature of barley growing, the farmers of the state have a chance to get back all the money spent in experimental work of all kinds, if they care to do so. With the exception of some features of alfalfa work, no other fact has been so outstanding at the Dickinson station, as the superior yielding qualities of the Haunchen and Swan Neck Barleys over the commonly grown Manchuria and Oderbrucker. As an average for several years, the Haunchen and Swan Neck, barleys have yielded 10.6 bu. or 45%, more than the Manchuria and Oderbrucker. This certainly is a very great difference.

Probably over the western two-thirds of the state, the Haunchen and Swan Neck are to be preferred.

The Dickinson station early saw the probably high-yielding quality of the two barleys, Haunchen and Swan Neck and made a distribution of seed to a few good farmers. At the present

time, there are available for seed probably 1,000 bushels of these two varieties. This is not a great amount but it will make quite a start if well distributed. Those that desire seed of one of these varieties should write to me and those enquiring will be referred to parties having seed.



## The Relation of Plant Diseases to Agricultural Work

Seventh Year—January

By Prof. H. L. Bolley, N. D. A. C.

It is only within a comparatively few years that it has been understood that much of the work which must be done on the farm is brought about by the fact that with crops and animals each kind has, or is likely to have, some one or other specific disease or trouble which injures its growth characteristics very materially. A diseased animal or plant cannot be expected to produce a good normal growth. The farmer or grower wishes to have the most rapid, perfect growth possible, whether he is undertaking the production of blooded stock, high grade fruit, vegetables or grains.

The editor of the North Dakota Farmer has kindly asked me to say a few words in regard to the effect of plant diseases upon farm cropping in North Dakota.

If the reader will try to understand or will stop to think how very difficult it is to understand the diseases which afflict man,—how difficult it is to prevent any of them, and how difficult they are to cure, it will also be easy

for him to understand how much damage may perhaps be done to a farm crop by the kind of diseases or parasites which prey upon it. In the case of the diseases of plants or farm crops, it is as in the case of diseases of animal and man. It is very much more important to prevent the occurrence of the disease than it is to try to cure the disease after the plant or crop is attacked. Very often there is no possibility of curing a diseased plant. Indeed the students of plant diseases are quite convinced that there are many crop diseases which are of such nature that the only way to get rid of the disease, or to prevent it from doing further harm in the crop is to exterminate the plant on which it is growing. This means that they believe that the disease, under present knowledge, is uncontrollable or unpreventable except its host be destroyed. Fortunately the people who talk cruelty to animals do not talk cruelty to plants and the farmer does not need to worry when he is told that he should destroy the stalk of corn which

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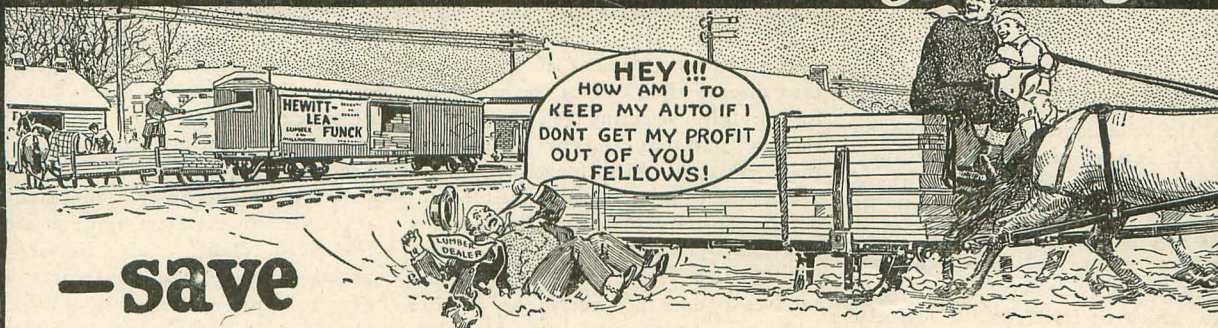


carries corn smut, or that when he sees a badly blighted yellow sickly potato vine in his field he should pull up such diseased plants and burn them before the diseases thoroly develop. He will thus prevent the spread of the disease to other plants of the crop. Plants are supposed not to have any particular feeling, so we do not need

to exercise our feelings when we go out and destroy a sickly plant which is of no use in the crop. Very much of the reduction in yield of the various crops might be overcome if each farmer could understand that in destroying the stems, old dead vines, the old dying parts of fruit trees, etc., and in raking up and burning the refuse or

crop waste one actually destroys many of the disease spores which otherwise would have an opportunity to attack the living plants of his following crop. In so doing one is also able to very largely help his neighbors in reducing the destructiveness of the diseases of the farm crops of the neighborhood.

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I think, in this article, this is all that I wish at present to say to the school boys and other readers of this paper,—namely that **sanitation, proper handling of soil and seed,** with reference to the prevention of the occurrence of the diseases is not only the right way but the most effective way to attack the diseases of farm crops. Let us take one or two examples which perhaps are familiar to most readers

### Corn Smut

In the case of the large masses of smut which one often sees on the place where the ear ought to be in the corn, or even in the tassel or various parts of the stalk, we have a disease which is produced by a peculiar germ or fungus which readily attacks the corn plant at any time when the plant is young, succulent and growing. After the filaments of the fungus once get inside of the stock they ramify to all parts and when these filaments begin to produce fruit of themselves, black spore masses break out in large posts, rupture the surface, and finally produce a very large growth which in itself breaks up into a countless number of minute black particles, which are the spores or seeds from which the smut plant will again reproduce itself next year. The only remedy that anyone is able to offer for this disease is that corn growers should go thru their fields, cut down the green stalks which show the smut masses when these smut masses first begin to form, collect the stalks and feed them immediately before the spores have been developed, or if the spores have become partly developed, collect the diseased stalks in a pile and burn them. This is clearly a sanitary measure intended to eliminate the largest possible amount of the smut from the field.

If these masses are allowed to mature their spores, when they fall to the ground the spores remain there for a number of years. As our country is very level and the wind blows very considerably, the dust containing the spores is wafted from field to field during the following season and whenever it falls upon a soft, rapidly growing, young corn plant, that plant is soon infected, and its usefulness to the farmer has passed.

Take again, the yellow, sickly potato vines that one often sees scattered thru some of the most fertile fields of the state. These sickly, yellow blighted vines are always associated with a seed piece which originally contained or bore some one of the destructive potato diseases, especially the one of potato rot, known as the brown rot. If the seed potatoes are selected carefully before planting, and

the seed tubers are treated or disinfected to kill any of the spores of such diseases that chance to be on the exterior, it is not probable that the disease will be seen in the field, except in the latter part of the season, in which the plants sometimes become infected from other fields by wind-blown spores. In the most notable potato producing regions, the most careful farmers walk thru their fields in early season and as soon as they see one of these sickly, yellow, blighting plants, they fork it out and collect the vines while they are fresh and pile them up and later burn them. Such men, not only do good for themselves, but prevent the spread of very destructive diseases by wind and water. It is very interesting to know that there is at present no known potato disease that cannot be prevented by carefully selecting sound, smooth-skinned potatoes and by disinfecting these potatoes with formaldehyde or some other proper seed disinfectant before they are planted. Proper crop rotation, by which we mean the growing of such crops in succession that each crop does not carry the diseases which are characteristic of the other. Some people claim that a crop rotation is intended to rest the ground and save fertility, but it is generally known that a good crop rotation tends to raise the largest possible crop and this thought is therefore hardly traceable. One of the very apparent reasons for crop rotation, however, is that it tends to prevent the accumulation of weeds which are peculiar to one kind of a crop, and it also tends to prevent the accumulation of the specific parasitic diseases which are characteristic of one sort of crop.

This perhaps is the most effective explanation of the reason why it does not pay to grow one kind of crop on the land all of the time. If we do that there will always remain a lot of refuse material, as the stubble of the wheat plant and the old roots in the soil, and these being gradually, year after year, more and more infected or attacked by the kind of parasites that

like to attack the wheat plant, the ground finally becomes so filled with such parasitic diseases that the wheat plant cannot do well. If, however, we plant corn, potatoes, flax or some other kind of crop, which are so distantly related to the wheat crop that none of the wheat diseases can grow on it, we get a good crop accordingly. After introducing the other kind of crops for a period of time, we come to a time when the ground has been purified of the original wheat diseases, and it is possible to again plant wheat, and have the crop grow and make use of such fertility as there is in the soil without having its roots and other parts badly injured.

To make use of an illustration with which almost every boy and girl is quite familiar, let us take up the so-called disease known as Stinking Smut of Wheat, in which the wheat kernel instead of growing full of nice flour becomes thoroughly plump, but filled only with black dusty spores similar to those seen in the large smut masses on the corn plant. This disease very greatly damages the wheat crop wherever it is present, and, in some cases, almost entirely destroys all of the kernels in a field. If it chances only to affect a few heads thruout the fields, it nevertheless, because of its peculiar abnoxious smelling and dark color formation so effectively injures the flour that the miller makes from that wheat, unless he introduces a rather costly process of washing or scrubbing the wheat. This accounts for why it is the farmers are compelled to sell smutty wheat at a price much lower than wheat that is not smutty. They not only lose in the yield, because the smut has destroyed many of the heads, but they also lose in its grade,

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and in the price, because from a field in which there is smut there will always come shriveled wheat: which tends to reduce the grade even tho the smut were not there, and the lower price is paid for the smutty wheat because it costs more to clean it before milling. We call such a trouble in the wheat crop a disease of the wheat crop. Strictly speaking, we mean that certain plants or a large percentage of them are attacked by a parasitic plant which sprouts at the same time the wheat plant sprouts and attacks the young wheat plants when they are two or three days old, and continues to grow on the interior of the wheat plants, using up the vitality more or less, but chiefly doing no easily apparent damage until it gets to the head. At this time, it grows inside of the young growing grains, and there uses up the starch material, develops it into its own body, and finally develops a large amount of black dusty powdery spores, its own crop of seeds (spores).

It pays to study the various kinds of diseases because eventually we learn their life history, that is to say, we learn all of the steps in their growth, from the birth of a new plant which produces disease until it is thoroly mature. When we know all of the steps or its habits of growth, then we can study which one of them we may be able to set aside. In the cases of smut plants, we finally learned that it was necessary for the seeds of the smut plant, or the black spore masses to be scattered on the grain. Unless the seeds of the wheat actually carry with them into the ground a small percentage of smut spores, so that some of the spores are in position to attack the young wheat plant the first or second day after it has germinated there can be no smutting of the crops. Therefore, we come to the conclusion that if we could put something on the outside of the grains, which will kill the smut spores, without killing the wheat grain that we can have an effective prevention of the smuts of wheat. By the combined efforts of many workers, it was finally ascertained that there were a number of substances which would accomplish this purpose. Hot water was very effective, but hard to carry out.

Copper sulphate would do it, but injures the wheat. When we thoroly studied the effects of formaldehyde, a feature which the writer had the pleasure of working out, it was learned that we have a substance, which not only destroys the smut spores, but very greatly proved beneficial to the wheat plants otherwise. We did not, at that time, know why this was, but we now know that besides killing the spores of smut, formaldehyde is very destructive to many other kinds of diseases, especially the root diseases which we

now know attack the roots of the wheat.

Taking all the studies upon smut together, the most important facts which were learned was that if the smut spores do not get a chance to attack the wheat plant while the wheat plant was but one or two days old from the seed, it never can attack it, therefore, it was a quick step to reason that the way to prevent the smut from damaging the wheat crop is to kill the spores or the grain. Stinking smut spores of wheat scar-

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until you have investigated the Temple Gas—Gasoline—Distillate Kerosene—Alcohol Engines. Sizes: 1 $\frac{1}{4}$ -2-3-4-5-6-7-8-9-10-12-15-18-20-25-30-40-50 H. P. One Cylinder, Double Cylinder and Four Cylinder Engines made to secure highest efficiency and lowest operating cost. All Temple Engines are Slow Speed, Heavy Duty Engines; they occupy less than one-third of the space of the Horizontal Engine; they weigh from one-third to one-half less than the weight of the Horizontal Engine and notwithstanding less bulk and less weight, they are built stronger in proportion to strains. Explosions are located low down on a flat base, which overcomes violent vibrations. These advantages greatly increase their range of use.

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tered in large quantities on the ground germinate immediately and die out so that their chance of producing infection in the crop is very small. Indeed one seldom, if ever, gets any attack of smut from the smut which falls from the wheat to the ground. Stinking smut is nearly always carried with the wheat into the bin during the threshing processes; and in the handling of the grain, the smut bolls get broken and the small minute spores get evenly distributed over the grain, and this is the reason why one must disinfect the grain every year before planting. No one can see a smut spore with his naked eye. It is too small. It takes a large number of these small organisms such as smut taken collectively in order to make a spot big enough for one to see with the naked eye.

#### DURABLE AND SANITARY FEEDING TROUGHS OF CONCRETE

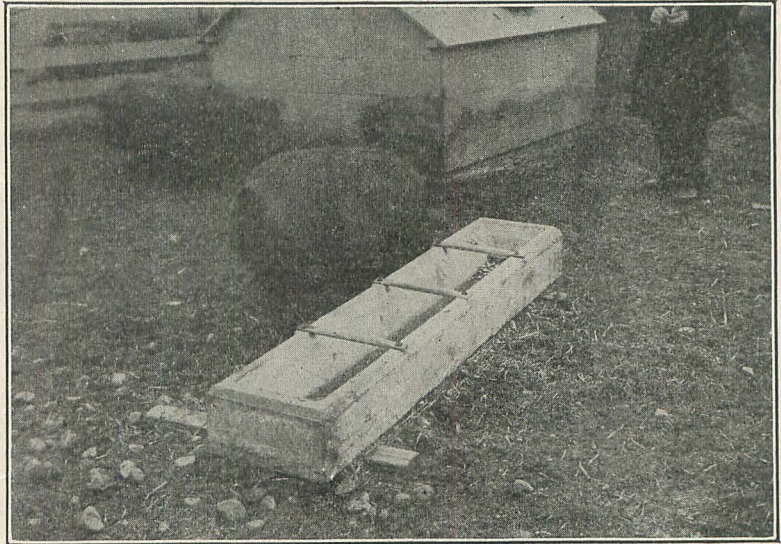
A simple, sanitary and economical use of concrete is shown in the accompanying picture of a feeding trough for hogs. Nothing could be easier than to make troughs of this character for swine or poultry. Old lumber free from splits and knot-holes may be used. To procure an everlasting receptacle of this character simply means the nailing together of two boards in the shape of an inverted V. These are placed on a board platform or other even surface and surrounded with a board frame or form, which is then filled with concrete. The concrete is struck off while fresh to insure an even bottom. No special finish is required and very rude work will answer the purpose. The dimensions of the trough will, of course, depend upon the length and size of the board forms. Small troughs for chickens or large troughs for hogs may be made with equal facility.

Another simple method of making a small trough is to substitute for boards half of a drain tile or terra cotta pipe for the inside form. Where the boards are used it would be well to oil the surface coming in contact with the concrete. This makes the removal of the forms easy. A mixture of 1 part Portland cement, 2 parts sand and 4 parts crushed stone or gravel will make a concrete suitable for this purpose.

To prevent hogs from crowding or getting into the trough, cross pieces should be used as shown. To provide for bolting the cross pieces, holes should be bored in the platform at required intervals and the bolts set in with the thread end down. The bolts

should go into the platform to a depth that will insure sufficient projection for the strap iron cross pieces and the nut. The concrete should be a "sloppy wet" mix and thoroly puddled

of Home Economics at the Agricultural College and continues for ten weeks. This course is planned to meet the needs of those who cannot devote the entire year to school work. The sub-



in the form. It should be kept in the form several days and protected from hot sun and wind. When sufficiently hard on the exposed surface to resist indentation with the thumb-nail, the forms may be removed. The concrete should then be sprinkled twice a day for the period of a week.

The strength of a trough of this character will increase with age. It may be easily cleaned and will resist the hardest usage. The longer it is exposed to the weather the more durable it will become.

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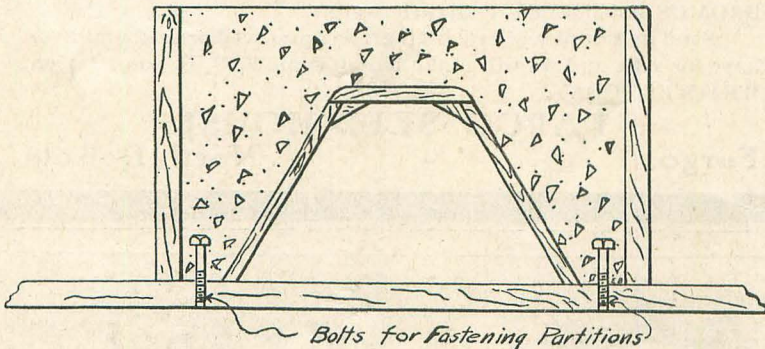


household management. Effort is made to make this course attractive and helpful to the girls of North Dakota. In the words of one of the girls who attended last year. "The student becomes acquainted with

of hope, a barrier of protection for the dairyman, his best friend and guardian.

Despite the fact that eleven of our eastern states, progressive along dairy lines, represented at a recent milk

Congress in New York voted unanimously for the tuberculin test, the California dairymen have fought against it, in one legislature actually getting a bill thru to the Governor for his signature, holding off the Veterinarian until "physical symptoms" were manifest. How often a cow has, like a "tuberculosis Mary," wandered at will thru the herd, infecting other cows, and yet showing no physical



some of the 'mysteries' of cooking, which, to learn by experience are slow and unsatisfactory. She learns that the common foods which all can have when living on the farm can be made most attractive and wholesome." New interests are centered about the home and community. The definition of "home" now accepted by too many, namely, "Home is the place to go to get ready to go somewhere else" is revised to give a broader and more satisfactory meaning of this place we call "home." Thus the Agricultural College of North Dakota makes it possible for the girls of this state to receive instruction which shall be of service to them in solving the problems of the household.

#### THE MILWAUKEE TUBERCULIN TEST DECISION

By Charles Cristadoro, Pt. Loma California

The decision, just handed down by the United States Supreme Court, upholding in effect the right of any city in the Union to pass an ordinance restricting the milk supplied as coming solely from the tuberculin tested dairies, and upholding a milk inspector in the dumping of milk (from untested dairies) in the gutter, sent into the city for sale and use, is far-reaching in its effect.

The tuberculin test is no experiment. Any test that rings true to the average of 98% is close up to the lines of infallibility. Considering the infectious nature of dairy tuberculosis and that a cow will go thru a long period of infecting incubation, showing no "physical symptoms" but yet infecting day after day healthy cows in the herd, until even up to 70, 80, 90% of the herd is infected and the danger made manifest, the tuberculin test becomes a veritable sheet anchor

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These fences are adapted for all field, farm and poultry uses, and possess superior structural advantages in quality of steel and fabric. Dealers everywhere throughout the country display these fences and will quote lowest prices.

They cost no more than other fences, and considering the *extra large and heavy wires* used, and the exclusive use of new *thorough galvanizing*, makes them especially attractive as the best and cheapest fences.

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symptoms until the end rapidly approaches, and she begins coughing and becomes emaciated! Of what use then is the tuberculin test? Why should such a cow be "tested" then except at the slaughter house with hammer and butcher knife? The time to have tested that cow was three, four, perhaps six months or more ago when at the outset of the disease, reaction would have been manifested and segregation could have been enforced. The Veterinarian with his tuberculin syringe was a persona non grata with the farmer and the farmer was bound, if possible, to keep him off the premises, even if he had to go to the legislature and do so.

#### No More Infected Milk

But this anti-tuberculin fight is over now, so far as sending infected milk for city consumption is concerned. With the power of the United States Supreme Court behind it, any city can now pass an ordinance against milk from untested, and presumably infected dairies, and it can be legally enforced.

It is to prove of no hardship to the dairyman any more than the enforcement of quarantine against scarlet fever, small pox and other infectious diseases is a hardship upon the public at large. It's only a question of time when tuberculosis, unrestricted, will ruin the best dairy herd that ever lived. The writer has studied the question of dairy sanitation, off and on, for thirty long years and thirty years ago was a thoro convert to the necessity of supplementing the clean dairyman's work with machine clarification followed by pasteurization. Milk is the best food and again the most dangerous food a child can take into its stomach, depending upon its freedom from germ life.

#### Impossible To Keep All Dirt Out

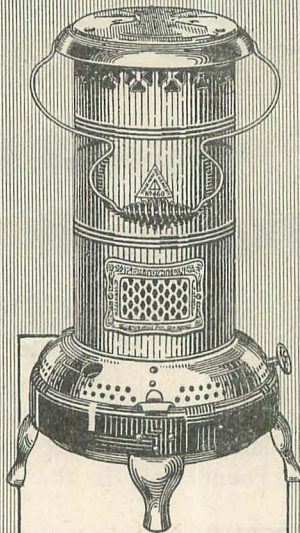
Dirt, in a multiplication of senses, will and does get into the milk. Absolutely germ-free water passed over a milk cooler (the cooler previously sterilized) on examination, has been shown to contain 11,000 bacteria to the C. C., just taken from the air when passing over the cooler. Milk clarification is no more a fad than is a clean stable, a curried cow, or pasteurization. —Milk Dealer, Wisconsin.

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At this time when farmers everywhere are turning their attention to the problem of the middlemen and the best thought of the country is bent upon the working out of some method by which the products of the field can be put into the hands of city people at less cost without depriving the farmer of his honestly made earnings, it is well for the farmer to have constantly in mind his own buying. He would like to see his products get to the consumer with less toll taken along the road. Let him do his buying with the same thought in mind.

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The poultry business is like any other business. It requires some intelligence and care. The most important is to start right, and this is true whether poultry be raised on the farm as a side line or whether it receives the entire attention of the operator on a city lot or poultry plant. To reach highest efficiency in poultry raising good incubators and brooders are indispensable. With an incubator constructed for ventilation as well as for regulation hatching operations can be controlled, and better than 90 per cent hatches are taken off any month in the year. Of this we have abundant proof.

The Blue-Ribbon Poultry Farm, of which Mr. C. H. Ahrens, Fargo,

N. D., is the proprietor, has issued a most attractive catalog for the year 1914. This catalog illustrates all his varieties of poultry; also incubators and brooders. No better investment can be made by those needing a change of blood in their flocks or who desire to make a start in some one or more varieties of pure bred fowls, than the purchase of eggs for hatching. The proprietor has had the experience of a life time in the poultry business, particularly along fancy or pure bred lines. We have frequently seen birds produced from eggs that were purchased from some reliable fancier that were worth many times the cost of the eggs.

Handsome catalog and mating list will be mailed free to all interested breeders who will address the Blue Ribbon Poultry Farm, Fargo, N. D., P. O. Box 427.

## QUERIES AND ANSWERS

**Could there be any harm in removing meat from brine, where it has been kept for four weeks, and freezing the meat, as the cellar is too warm?**

It would be perfectly safe to remove the meat from the brine and freeze it and meat so treated would be safe for eating, so long as it is kept frozen and not allowed to spoil or thaw, as in the case of other meats.—E. F. Ladd, N. D. A. C.

**Why is hard coal more valuable than soft coal?**

The question is ambiguous because the value of hard coal and the cost of hard coal does not necessarily mean the same thing. Hard coal costs more than the soft varieties because the supply is limited and confined to practically one section of this country. Its high price is due in a considerable measure to the cost of transportation. Hard coal is particularly

adapted to use in stoves of the base burner type because it is dense, contains very little water, is of high heating value and burns without smoke. It is clean, nice to handle and so long as people can afford to pay the price it will be very popular.

The value of fuel is determined by the amount of available heat it will produce. In many cases soft coal is of much greater value than hard coal but it is not so convenient to handle and is often objectionable because of the smoke produced. Soft coal fires demand considerable attention to keep them in the best condition. At the present market prices in North Dakota, lignite is more valuable fuel than hard coal when compared by the amount of heat that may be obtained for the price, but people are willing to pay a higher price for hard coal because it is more convenient to use.—E. S. Keene.—N. D. A. C.

**What is the best treatment for chapped hands?**

Frequently wash with any good soap and warm water; thoroly dry and apply a lotion or ointment. A good lotion is made of glycerine and rose water. Boracic acid ointment is good.

Lotion

60 gr. whole gum tragacanth

16 oz. rose water

1 oz. of alcohol

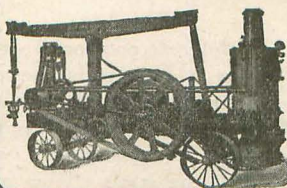
1 oz. glycerine

Let tragacanth and rose water stand twenty-four hours; then add alcohol and glycerine.—Miss Alice Haggart.

**What is necessary to do in order to have water tested as to its suitability for drinking purposes and for irrigation?**

Analyses will be made for the farmers of drinking water and water being used for purposes of irrigation, free of charge, providing application is first made and the blank furnished is properly filled out and returned with the sample of water. The sample should be sent by express prepaid and a statement made as to what is wanted, together with the information called for in the circular. Two quarts should always be submitted.—E. F. Ladd, N. D. A. C.

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You can make big money making wells. This is one of the few lines of work that are not over crowded. The demand for wells is far greater than can be supplied by the machines now at work. Well Drillers command their own prices. We build the celebrated HOWELL line of Well Machinery, for making deep or shallow wells of all sizes, for all purposes and in all kinds of ground. Our machines are the most up-to-date on the market, contain all the latest improvements, are extremely strong and simple, do perfect work, are easily operated and are very FAST WORKERS. Write to-day for our free Catalog A. 6

**R. R. HOWELL & CO., Minneapolis, Minn.**



# North Dakota Farmer

Entered as second class matter in the postoffice at  
Lisbon, North Dakota

**PUBLISHED EVERY MONTH**

**W. G. CROCKER, PUBLISHER**  
Lisbon, N. D.

**E. F. Ladd, Editor FARGO, N. D.**

**BUSINESS MANAGEMENT, LISBON, N. D.**

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Remittances should be made by Draft, Post-office Order or Express Order.

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**Vol. 15 DECEMBER, 1913 No. 6**

How to "touch" papa comes nearer the end and aim of too many young fellows than to do things for themselves.

Have you contributed the price of a bushel of wheat toward building a dormitory for the boys at the Agricultural College?

The livestock brought into the state the past season spells increased and more permanent prosperity for the farmers. All-grain-farming is rapidly becoming past history.

The public schools should prepare children for life—and incidentally for college entrance. The child is by nature and instinct a utilitarian, and his education should prepare him for manual activities.

The question is not how much rain falls, but how much gets into the soil and is held there until the crop needs it. Weeds are among the most destructive enemies of crops since they rob the soil of moisture the crops are in need of. Kill 'em.

The farmer wants cheap money. Whenever he arranges his farm work so that his income is sure and his ability to meet his obligations unquestionable, then interest rates are bound to be lowered as by gravity. Money takes no chances.

There is too much in courses of study which when completed, at whatever expense and worry, starts immediately toward memory's junk pile. This refers to subjects which students do not want, that they see no use in

pursuing—but only do so because the authorities demand it.

An increase of one bushel per acre for all kinds of grain would add millions of dollars to the state. At the same time, several bushels of increased yield per acre is an elementary proposition. All that is required is better seed, better tillage, and systematic rotation of crops.

There is a vast difference between a house and a home. Many a fine house is elegantly furnished, yet is not a home in the real sense of that word. Also many a modest house—even many a hovel—that is more nearly a home than the elegant mansion. The "rural home," therefore, is significant.

There is room for thousands of young men to engage in farming before the farms of North Dakota will be reduced to even moderate size. This in spite of immigration. A quarter section of good land is sufficient in area to afford a good living and sufficient surplus to keep the wolf from the door during the decline of life.

A steady improvement in farm management is noticeable in every part of the state. The boys that attend the Agricultural College carry good ideas home with them and put them into practice. The demonstration farms and county agents also are exerting a most salutary influence in favor of improved methods of agriculture. Taken all together, agriculture is making good headway in North Dakota.

The Manitoba government with a rural population of about half that of North Dakota, is putting approximately \$3,000,000 into new agricultural college for building, and for equipment. The province of Manitoba, realizing that agriculture is its chief support, proposes to develop its farming interests to the very utmost by providing ample means for the education of its boys and girls in terms of farm life, not alone for the production of greater wealth, but to know how to use it. The money thus invested will return tremendous dividends to the province of Manitoba.

There was fully \$6,000,000 worth of fertility in the wheat straw the present season. Including oats, flax, and barley, \$10,000,000 would approximately represent the manurial value of the straw of the state. How much of this was burned? Half of it? In

that case farmers sent up in smoke about \$5,000,000. If an equal amount of gold could be had in northern Alaska—away hundreds of miles over glaciers, rocks and tundra—there would be a mad stampede for this gold. Strange what difference it makes whether gold is found in gravel or in straw. Some one remarked: "What fools we mortals be!"

The weed problem is one of the most serious the farmers of the state have to contend against. And weeds are becoming more numerous with each passing year.

Seasons of drouth result more often from weeds robbing the grain of the moisture in the soil than from lack of rainfall. In other words, the climate gets blamed for insufficient precipitation when the weeds should be blamed for robbing the soil of moisture. What is the remedy? Destroy the weeds. Practice a system of farm management that discourages rather than encourages the multiplication of weeds. Corn and potatoes if thoroly cultivated, prove excellent weed destroyers.

Livestock are sure mortgage lifters. They are not easily affected by adverse climatic conditions. They will eat almost anything and convert what they eat into money. Even the manure they make is worth money and good money at that. The farmer engaged in animal husbandry to a reasonable extent, seldom suffers on account of extortionate rates of interest. The fellow to be pitied is the all small-grain-farmer. What with the burning of his straw and getting his soil filled with weeds and fungous diseases, and depleted of fertility, the future is indeed dark for him. His method of farming also makes it dark for the country.

Mr. Farmer: Is your home as well provided with modern conveniences for doing your wife's work as the farm is for doing your work? Does she pump and carry water for the kitchen, occasionally saw the fire-wood, milk the cows and feed the pigs? Have you noticed that she is growing prematurely old? Perhaps not. Well, far too many women, however, are sacrificed upon the altar of the farmer's ambition for making money. Too many women are not given a "square deal" on the farm. Often, doubtless, she is unnecessarily burdened thru thoughtlessness.

Rearing children and doing her work under the most favorable conditions is all that she should be required to do; for her life is not to be weighed against gold.



## Pure Food Advertisers

The products advertised below are in compliance with the pure food law of North Dakota and of the highest grade.  
ASK YOUR GROCER FOR THEM.

"BUY"

"EAT"

### HOME BRAND

Pure Food Products

"ECONOMY" "SATISFACTION"

Griggs, Cooper &amp; Co.

MANUFACTURING  
WHOLESALE  
GROCERS,

ST. PAUL, MINN.

Main Offices:  
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**DR. PRICE'S  
JELLY  
DESSERT**  
NUTRITIOUS-WHOLESOME

One package, 10 cents, makes one  
pint of wholesome Fruit Jelly. All  
flavors from true fruits.

## The Purest of Pure Food Products

are packed under the Brands of

*Nokomis*  
PURE FOODS

*Blue Bird*  
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*Wampum*  
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BRANCH HOUSES-Minot, Bismarck, N. D. Billings, Bozeman,  
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MONARCH BRAND



FOOD PRODUCTS

A GUARANTY OF PURITY. A WEL-  
COME GUEST at every table where the  
HOUSEWIFE demands the BEST. THE  
MONARCH LABEL insures QUALITY in  
Coffee, Catsup, Pickles, Maple Syrup, Canned  
Goods or any article bearing the MONARCH  
BRAND of REID MURDOCH & CO  
CHICAGO.

## ANOTHER PURE FOOD PRODUCT

CEREKOTA

Self-Rising

Pancake Flour

Is a Scientific Preparation of Healthful Appetizing Ingredients  
and the Best Flour Milled in North Dakota

**GUARANTEED Pure and Wholesome**

Ask Your Grocer for a Trial Package

**Bemmels Milling Company**

Sole Manufacturers

Lisbon,

North Dakota



# Livestock Department



## FARM AND STOCK NOTES N. J. Shepherd

Milk the cows clean if you would have them milk long.

The more quiet sheep are kept the more quickly they will fatten.

Fowls need more fresh air according to their size than any other farm stock.

To a very considerable extent it is only the extremes that work injury to man or beast.

One of the essential conditions to secure eggs in winter is clean, dry, warm quarters.

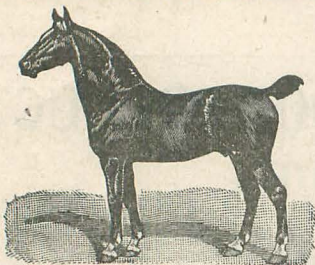
### REGISTERED HOLSTEIN HEIFERS

We offer for sale a few registered heifers from one year to 20 months old, good individuals, of excellent A. R. C. ancestry. Also one registered bull one year old in January, next.

**BROWN & CASSELL**  
Hope, - - North Dakota

**Warranted to Give Satisfaction.**

## Gombault's Caustic Balsam



### Has Imitators But No Competitors.

A Safe, Speedy and Positive Cure for Curb, Splint, Sweeney, Capped Hock, Strained Tendons, Founder, Wind Puffs, and all lameness from Spavin, Ringbone and other bony tumors. Cures all skin diseases or Parasites, Thrush, Diphtheria. Removes all Bunches from Horses or Cattle.

As a Human Remedy for Rheumatism, Sprains, Sore Throat, etc. it is invaluable. Every bottle of Caustic Balsam sold is Warranted to give satisfaction. Price \$1.50 per bottle. Sold by druggists, or sent by express, charges paid, with full directions for its use. Send for descriptive circulars, testimonials, etc. Address

The Lawrence-Williams Co., Cleveland, O.

The nearer you get to full blood in breeding the more certain you are of good results.

To have the horses get the greatest benefit from their feed give them sufficient time to masticate it.

The first hundred pounds put on a pig costs less than the second and the second less than the third and every additional hundred costs more than the preceding.

The triple profits derived from the flock—wool, lambs and mutton—come in at different seasons; and for this reason sheep are better suited to the farmer of small means than any other stock.

Good digestion is the result of feeding enough to sustain the animal and repair waste, but not enough to keep the stomach in an over-loaded condition all the time. It will do the horses good to have sufficient appetite to relish a meal when it is given them.

In sheep breeding there is but one way of keeping the ideal sheep and that is by trying to improve it. Sheep never stand still, they are either improving or they are deteriorating, depending upon the management given.

All the animal eats beyond what is necessary to sustain life goes to make increased weight or product and if the food is reduced below a certain point the animal is bound to consume its own tissues to make up the deficiency.

If cream is kept in a cold room for two or three days, then warmed up hurriedly and the temperature tested by the finger instead of the thermometer and put in a cold churn, there is likely to be complaint that the butter does not come in time. But keep the cream in a temperature sufficiently warm to make it slightly acid; keep it well stirred and on churning day regulate the temperature of both cream and churn to suit the season and if other conditions are right the butter will come in time.

It is in favor of the sheep that it will yield a profit under conditions so unfavorable that other farm animals under the same conditions will be unprofitable; yet it will yield as good pay as any farm animal for the most favorable conditions. And in the handling of sheep, as of other farm animals, the best feed and care yield the highest profit. But the man with

## CLASSIFIED ADS.

### One Cent a Word

Small advertisements will be classified under appropriate headings at the low price of one cent a word for each insertion. Cash must accompany all orders. Each initial or number must count as one word. TRY IT HERE.

## LIVE STOCK

### FOR SALE

**GALLOWAY CATTLE**  
J. W. & F. T. PETERSON, Litchfield, Minn

**POLAND CHINA PIGS**, also Shropshire sheep. Seed grain **GEORGE N. SMITH**, Amelia, N. D.

**FAMOUS O. S. C. SWINE.** Am now booking orders for fine pigs of April farrow. Price: \$18 each; \$35 a pair. All Stock recorded free. Shipping point: Mankato.

**ROBT. A. HAEDT**, Eagle Lake, Minn.

**ASH GROVE FARM.** Knudtson & Son, Props. Breeders of Pure Bred Percheron Horses and Short Horn Cattle, Both Sexes. Stock for Sale. Route 1 Fullerton, N. D.

### J. S. BIXBY

**RED POLL CATTLE.** If you want dual-purpose cattle, I have the best. Rhode Island Reds, also in stock. **LISBON** **NORTH DAKOTA**

**FOR SALE.** Work Horses, Drivers, Stallions and Double-standard Polled Durham Bulls. **LEAL STOCK FARM** Leal, N. D.



**Purebred Registered  
HOLSTEIN CATTLE**  
The Greatest Dairy Breed  
Send for FREE Illustrated Book

Holstein-Friesian Assn., Box 135 Brattleboro, Vt.

## ENVILLA STOCK FARM

Envilla Stock Farm, Cogswell, N. D. will quote you special prices on Angus Cattle, Shetland Ponies, Duroc Jersey Hogs, Wolf Hounds, Collies, Rat Dogs and other breeds, Angora Cats. All varieties of chickens; turkeys, geese, ducks, guineas, pheasants, rabbits, ferrets. Pets. Live Foxes, Skunks, Mink and Badgers.

## MISCELLANEOUS

**WANTED!** To hear from owner who has good farm for sale. Send description and price. **North-western Business Agency, Minneapolis, Minn.**

### FOR SALE

One of the best 640-acre stock ranches in the state of Montana. Close into town. First-class farming lands near town. All under irrigation. Price \$15 to \$30 per acre. Write to

**F. R. KRAMER & CO.**

Malta, : : : : Montana

**WANTED.** Live Foxes, Skunks, Mink and Badgers, any time.

**Envilla Stock Farm, - - Cogswell, N. D.**

**AGENTS WANTED.** Farmer's Directory, Account Book. Exclusive home territory. Easy seller. Big inducements. Particulars Free. Write **Naylor 938** **Ft. Wayne, Ind.**

**WANTED AGENTS** either sex, for **Economy Administration Cook Book**, the much talked of and biggest seller of the year. \$10.00 to \$15.00 per day right now. Free descriptive circular, or send 25c. for Outfit at once, and first choice of territory. Best Terms. Also Ten Best Selling Holiday Books-Combination Outfit. 25c. 50 per cent commission. Address, **A. B. KUHLMAN**, Publisher, 136 W. Lake St., Chicago, Ill.

**HOUSEKEEPER WANTED.** One to go into partnership in raising poultry three miles from town at my home. Am 50 years old and have one grown son. The right one will be wanted for keeps. **Lock Box 324 - - Dickinson, N. D.**

### WANTED! 200 GAS TRACTOR MEN

To become experts through the Y. M. C. A. Gas Tractor and Auto School, Fargo, N. D. Three and six months' courses. School opens Oct. 15. Address **Ralph R. Wolf, Gen'l Sec.**

Twenty Acres, Irrigated, Part-bearing Orchard. 1000 boxes this year. I am the owner and must sell in 30 days. Write me for particulars. Photo **W. H. ELLIS** **Coeur d'Alene, Idaho**



thin or worn lands to enrich can use sheep to a better advantage than he can any other animal....

## SELECTING THE DAIRY COW

G. L. Martin, N. D. A. C.

(Eighth Year—Fifth Month)

The true standard of value to be kept in mind in the selecting of farm animals is production—their ability to do things whether it be a horse, a steer, a hog, a sheep or a cow. In the horse for draft purposes are desired those qualities which indicate the production of power, in the steer beef, in the hog pork and in the sheep mutton. Likewise in the dairy cow are desired those outward signs which indicate her inward capabilities. While outward appearances are not to be relied upon entirely, yet there are a few which are well to keep in mind in the selecting cows for dairy purposes.

### Capacity

The first essential to production is capacity. In order to produce large quantities of milk the cow must have great capacity to store, digest and assimilate large quantities of food. By nature ruminants were intended to consume large quantities of roughage, consequently the cow must have a large stomach in which to store food, large intestinal surfaces to secrete digestive juices, to absorb and assimilate the nutriment. Then the points indicating capacity—great length, depth and width of abdomen are desired.

### Conformation

The second point to observe is the tendency of the animal toward flesh production. If the cow is heavily fleshed on the neck, shoulders, back and loins, large amounts of food material of necessity must go to nourish these parts at the expense of milk production. It is quite generally conceded that a maximum flesh production and an economical milk production cannot be combined well in the

same animal outside of a few exceptions. This point is verified in the results found at the Minnesota Station where the cost of producing a pound of butter-fat and a hundred pounds of 4% milk from cows of the following types:

|                   | 1lb B. F. | 100lb.4% M |
|-------------------|-----------|------------|
| Beef conformation | \$ .175   | \$ .70     |
| Medium            | " \$ .151 | \$ .604    |
| Dairy             | " \$ .121 | \$ .484    |

It may be noted that with animals having beef producing tendencies it costs nearly 45% more to produce a hundred pounds of milk than with those of strictly dairy tendencies and with cows of medium tendencies about 25% more than with those of the dairy type. It follows that to obtain the largest and most economical returns in milk production one must look for the dairy type or thin neck, medium shoulders, light and thinly fleshed; back lean, straight and open jointed; and loin broad and lean and withall a deep, wide, chest indicating

great constitution and heart power which goes with strong vitality and

## Pedigreed Stock

**PEDIGREED POLAND CHINA  
HOGS & SHORT HORN  
CATTLE FOR SALE. NOW  
BOOKING ORDERS FOR  
SPRING PIGS OF THE**

## BEST KNOWN BREEDING

### WHITE DENT SEED CORN FOR SALE

Booking orders for Barred Plymouth Rock Eggs & Mammoth Bronze Turkeys

**Stock for Sale at all times. Pedigree  
Furnished. Write your wants to**

**C. H. SCHUTT  
R. R. 1, Fairmount, N. Dak.**

## ST. PAUL UNION STOCKYARDS COMPANY, SOUTH ST. PAUL, MINN.

### Comparison of Receipts and Shipments of Livestock for November, 1913.

| Receipts             |        |        |         |        |        |            |
|----------------------|--------|--------|---------|--------|--------|------------|
| Railroads            | Cattle | Calves | Hogs    | Sheep  | Horses | Total Cars |
| C. R. I. & P.        | 297    | 77     | 1954    | 161    | 19     | 42         |
| C. G. W.             | 968    | 198    | 7126    | 651    | 31     | 144        |
| C. M. & St. P.       | 3307   | 606    | 18906   | 11858  | 19     | 457        |
| M. & St. L.          | 1014   | 355    | 11944   | 795    | 2      | 198        |
| C., St. P., M. & O.  | 3000   | 557    | 22784   | 5052   | 64     | 468        |
| C. B. & Q.           | 407    | 36     | 2717    | 1066   | 20     | 64         |
| M. St. P. & S. S. M. | 13483  | 1659   | 23971   | 5496   | 17     | 880        |
| Gt. Nor.             | 16616  | 2880   | 37672   | 147385 | 4      | 1965       |
| Nor. Pac.            | 9520   | 1094   | 17691   | 23637  | 70     | 675        |
| St. P. B. & T.       |        |        |         |        |        |            |
| Driven In.           | 542    | 109    | 1096    | 75     | 21     |            |
| Total                | 49154  | 7571   | 145861  | 196176 | 267    | 4893       |
| Inc. over 1912       | 7878   |        | 41538   | 44323  | 173    | 1108       |
| Decrease             | 1056   |        |         |        |        |            |
| Jan. 1 to date       | 385071 | 109472 | 1095391 | 726993 | 5012   | 35195      |
| Inc. over 1912       | 19093  |        | 211423  | 144520 |        | 5217       |
| Decrease             |        | 14269  |         |        | 81     |            |
| Average Wts.         | 789    | 223    | 213     | 79     |        |            |

| Shipments      |          |                |             |                     |            |                      |
|----------------|----------|----------------|-------------|---------------------|------------|----------------------|
| C. R. I. & P.  | C. G. W. | C. M. & St. P. | M. & St. L. | C., St. P., M. & O. | C. B. & Q. | M. St. P. & S. S. M. |
| 1681           | 2749     | 9121           | 1666        | 10349               | 6098       | 1853                 |
| 4              | 36       | 159            | 5           | 182                 | 79         | 120                  |
| 67             | 200      | 28736          | 1251        | 4705                | 10430      | 10066                |
| 253            | 7997     | 20192          | 2445        | 8866                | 101036     | 8094                 |
| 41             | 21       | 21             | 48          | 18                  | 23         | 52                   |
| 53             | 132      | 660            | 80          | 408                 | 793        | 121                  |
| 91             | 62       |                |             |                     |            |                      |
| 19             | 131      | 1033           | 52          | 62                  |            |                      |
| St. P. B. & T. |          |                |             |                     |            |                      |
| Driven Out     | 687      | 160            | 291         | 734                 | 3          |                      |
| Total          | 37459    | 1014           | 45811       | 160717              | 227        | 2400                 |
| Inc. over 1912 | 8494     |                | 22518       | 51825               | 143        | 770                  |
| Decrease       |          | 639            |             |                     |            |                      |
| Jan. 1 to date | 279472   | 22060          | 267585      | 566319              | 3283       | 14384                |
| Inc. over 1912 | 27929    | 329            | 58869       | 159049              |            | 2144                 |
| Decrease       |          |                |             |                     | 1637       |                      |

### SALESMEN—SINCERE PLUGGERS MAKE GOOD

Big, new, automatic, combination 12 tools in one. Sells to contractors, farmers, teamsters, fence builders, threshers, mines, etc. 24 pounds but lifts or pulls 3 tons. Stretches wire, pulls posts, hoists, etc. Write for the facts on this fast money maker. Harrah Manufacturing Co., Drawer C, Bloomfield, Ind.

**WANTED: FARM LANDS.** For quick results state price and description in first letter.

**Western Sales Agency  
Phoenix Bldg., Minneapolis, Minn.**

**ALFALFA SEED DIRECT.** For Farmers' Price and Sample, Write **J. L. Maxson, Buffalo Gap, S. D.**

**WANTED: Improved Farms and Wild lands.** Best system for quick results. Full particulars and magazine free. Don't pay big commissions. **Western Sales Agency, Minneapolis, Minn.**



insures a continuous operation of the body organs.

#### Ability

In the third place, a good dairy cow usually exhibits reasonably strong indications of her ability to convert raw food material into milk by the udder development. While external appearances are often deceiving yet large production usually is coupled with a reasonably large udder. In the udder is where the milk secretion occurs while the indication is length, breadth and depth of udder, attached high and full behind, level beneath with teats of reasonable size and evenly placed; extending well forward giving it capacity; free from fleshiness and flexible indicating large internal glandular secreting surface capable of much expansion; and well-supplied with nerves, lymphatics and blood vessels. Fleishy udders that do not contract and become flexible when empty are objectionable even tho well formed in as much as they are more subject to inflammation and milk fever.

#### Equipment

Coupled with a large well-shaped udder must be large tortuous milk veins. The quantity of milk secreted by the glands in the udder is dependent upon the amount of blood flowing thru that organ. The milk veins take the blood supply after it has passed thru the udder and carry it back to the heart. Hence large milk secretion means a large blood supply so it is well that the milk veins be long, branching and tortuous indicating that the blood flows thru them in large amounts and slowly, thus giving time to deposit its load of milk constituents in the udder. It is desirable that the milk wells or openings where the veins enter the abdomen be large and numerous, giving free and ample room for the blood to enter the abdomen well up toward the heart.

#### Energy

Lastly is desired much energy as indicated by a broad forehead, the seat of nervous force; a dished face resulting from large eye sockets which go with a broad connection of head and neck indicating large strong attachment of brain with spinal cord; a large open spine with ample room for a large spinal cord to connect the seat

of energy with and transmit great nervous force to all parts of the body. Then in selecting the dairy cow the points to be observed are capacity, conformation, ability, equipment and energy.

#### CARING FOR CREAM G. L. Martin, N. D. A. C.

(Eighth Year—Fifth Month)

The influence of temperature upon complete removal of butter-fat from skim milk with the hand-separator and the development of flavors in cream are often not well understood by cow-keepers.

When the milk is drawn from the animal the temperature is about 98 degrees, but it cools very rapidly in contact with air and the utensils. It is found that when milk is separated at about 80 degrees to 85 degrees that

less butter-fat is left in the skim milk. The reason for this is that there is a greater difference between the weight of the skim milk and the butter-fat at this temperature than when it is cooler. This causes the heavy skim milk to be forced toward the outside of the separator bowl and the cream

## IF YOU WANT

ANGUS CATTLE  
OXFORD DOWN RAMS  
EMBDEN GEESE  
WHITE  
HOLLAND TURKEYS  
BLACK RABBITS

GET OUR EXPRESS-PAID PRICES

WILLOBANK FARM, LARIMORE, N. D.

## W. F. JACOBS Livestock Auctioneer

Thoroughly Posted on Pedigress

Terms Reasonable LISBON, N. D. Write for dates

#### ST. PAUL UNION STOCKYARDS COMPANY, SOUTH ST. PAUL, MINN.

| States         | Cattle | Calves | Hogs   | Sheep  | Horses | Total Cars |
|----------------|--------|--------|--------|--------|--------|------------|
| Minnesota..... | 18919  | 5765   | 97120  | 14912  | 45     | 2064       |
| Wisconsin..... | 4909   | 976    | 21507  | 7678   | 2      | 533        |
| Iowa.....      | 54     | 6      | .....  | .....  | 70     | 6          |
| Far South..... | 14     | 7      | .....  | .....  | 82     | 5          |
| South Dakota   | 1347   | 86     | 7260   | 3051   | .....  | 172        |
| North Dakota   | 10926  | 582    | 19815  | 17237  | 29     | 769        |
| Montana.....   | 7743   | 29     | 47     | 153298 | 17     | 1133       |
| Far West.....  | .....  | .....  | .....  | .....  | 22     | 1          |
| Manitoba&NWT   | 5121   | 117    | .....  | .....  | .....  | 205        |
| Far East.....  | .....  | .....  | .....  | .....  | .....  | .....      |
| Returned.....  | 121    | 3      | 112    | .....  | .....  | 5          |
| Totals.....    | 49154  | 7571   | 145861 | 196176 | 267    | 4893       |

Correction—In last month's report, North Dakota, should show 1,149 cars instead of 449.

#### Disposition of Livestock

|                    |       |       |        |        |       |       |
|--------------------|-------|-------|--------|--------|-------|-------|
| So.St.Paul P'k'rs  | 16357 | 4615  | 103137 | 29355  | ..... | ..... |
| Cy. & St. Butch.   | 860   | 27    | 12206  | 503    | ..... | 154   |
| Outside Packers    | 25    | ..... | 29287  | 3643   | ..... | 281   |
| Minnesota.....     | 9335  | 369   | 672    | 21898  | 116   | 394   |
| Wisconsin.....     | 1024  | 122   | 1639   | 1400   | 39    | 63    |
| Iowa.....          | 6802  | 23    | 1617   | 7297   | 22    | 253   |
| Nebraska.....      | 962   | ..... | .....  | .....  | ..... | 30    |
| Kans. & Mo.        | 38    | ..... | .....  | .....  | ..... | 1     |
| South Dakota       | 3325  | 198   | .....  | 3355   | 2     | 112   |
| North Dakota       | 1377  | 116   | .....  | 360    | ..... | 44    |
| Mont. & West       | 1693  | 87    | .....  | .....  | ..... | 46    |
| Far South .....    | 15    | 1     | .....  | .....  | 1     | 1     |
| Manitoba&N.W.T.    | 38    | 4     | .....  | 206    | ..... | 3     |
| Mich.&E.Can.       | ..... | ..... | .....  | .....  | ..... | ..... |
| Chicago.....       | 9907  | 30    | 192    | 118790 | ..... | 930   |
| Ills. (ex Chicago) | 1829  | 34    | .....  | .....  | ..... | 64    |
| Eastern Points     | 106   | ..... | 86     | 3265   | 47    | 19    |
| Returned.....      | 123   | 3     | 112    | .....  | ..... | 5     |
| Totals.....        | 37459 | 1014  | 45811  | 160717 | 227   | 2400  |

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N. Dak. Farmer, Lisbon, N. D.



toward the middle hence more complete separation. If the milk is allowed to cool to 70 degrees or lower before separating the weight of the butterfat and skim milk are so near alike that poor separation will result.

Another reason for separating the milk immediately after milking is so that the cream may be cooled. The bacteria or the little organisms that produce the bad flavors in milk and cream require plenty of food and a warm place to work. They live upon the sugar that remains in the cream after separating, so unless the cream is cooled they go right to work. The bacteria that produce the bad flavors in dairy products come from the dirt on the cow, dust in the air, dirty utensils. It is difficult to prevent some from getting into the milk but many are removed by the separator and those left in the cream may be kept from developing if the cream is cooled to 70 degrees or lower.

A great deal of the poor cream delivered to the creameries could just as well be kept in good condition if kept in cold water so that bacteria could not work. (A plan for cooling cream may be carried out in the following manner:

An old barrel or a small vat set between the pump and watering trough so that cold water will be kept about the cans will improve the condition of the cream wonderfully. Most of the well water is close to 50 degrees in temperature; however, the cream will always be somewhat higher than the layer of water just around the can so running the water thru the vat will replace the work layer of water next to the can with cold water. This is the only way to remove the heat from the cream, hence the need of frequent change of water in the vat.

Often where a farmer has only a few cows the cream is delivered but once or twice a week especially in busy seasons. This is usually the time when cream needs the most attention, so with the use of some device as suggested the quality of our cream can be greatly improved.

Another important point in this connection is the mixing of warm and cold cream. This never should be done. It is a sure way to develop poor flavor because it gives the bacteria in the cold cream an opportunity to work again, and if this is repeated several times bad flavors are sure to result.

In conclusion, I recommend separating the milk as soon as possible after milking, cooling the cream with plenty of cool fresh water, keeping the cold and warm cream separate and delivering to the creamery as often as possible.

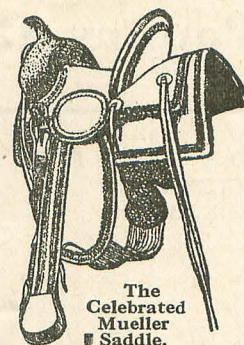
## NO MONEY FOR INSPECTION OF MILK

The Dairy Division of the Bureau of Animal Industry, Department of Agriculture, has just completed an inquiry to determine the amount of money spent for dairy and milk inspection by the cities of the United States. In answer to circular letters sent out

Twenty-two cities, some of them containing more than 50,000 inhabitants, reported that they were not spending any money for milk inspection. Of those that reported expenditures to protect their citizens from impure or disease-carrying milk, Waycross, Ga., reported that it spent a little over 19 cents per capita, which is the highest figure reported.

Of the 184 cities reporting, only 43 spent 5 cents or more per capita to safeguard the public from the dangers of dirty milk. The average of all cities reporting, excluding those that reported that they spent no money for this protective work, was 4.14 cents per capita.

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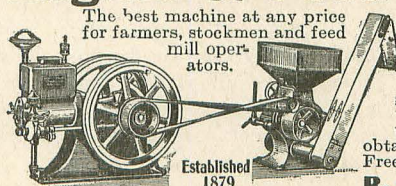
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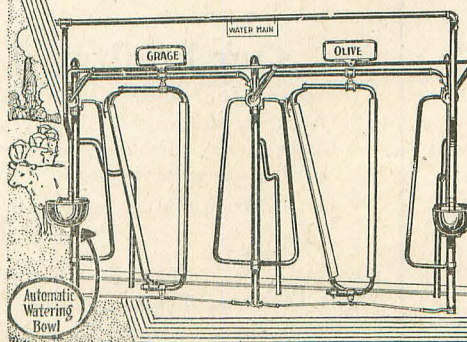
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## Poultry Department



### CHEAP GREEN FEED FOR POULTRY

Michael K. Boyer

The successful poultryman is one who gets plenty of eggs in the winter, and this he accomplishes by feeding green feed to his hens. All sorts of vegetables and even silage have been used for this purposes, but in recent years sprouted oats has been very widely used as a green food for poultry, not alone because it is cheap, but also by reason of the fact that the fowls are very fond of it.

Experience at the Maine Experiment Station indicates that to make a satisfactory product the oats must be grown very quickly and this requires plenty of warmth, moisture and sunlight. The following method of sprouting oats was found to be the most successful:

The oats should be soaked in water at a temperature of from 60 to 70 degrees F., for about forty-eight hours in pails or galvanized wash tubs, and during this soaking process there should be added from 5 to 10 drops of formalin to kill the spores of moulds. After soaking they are spread out about one inch thick on trays, which are placed in a sprouting rack, seven to each rack, the trays being ten inches apart, and kept at a temperature of from 60 to 80 degrees.

In from seven to ten days, depending on the temperature, they will have developed sprouts about three to four inches long, as well as a massive root development, the entire mass being very tender and succulent. The birds will eat ravenously. About one square inch of feeding surface is supplied daily to each bird, or what they will clean up quickly. The oats must not be fed in excess as they are laxative, and are apt to produce diarrhea. It should be clearly understood that the purpose for which green sprouted oats are fed is their tonic and stimulative influence on the digestive organs. They are not fed for the food value of the oats themselves. If one wishes merely to feed oats they can be most economically fed not sprouted. The point of sprouting is to furnish fresh, succulent, green food during the winter months.

Years ago advertisements frequently appeared in poultry and other journals of sale of a formula of making poultry food for 20 or 25 cents a bushel. Investigation showed this "food" to be merely sprouted oats,

the claim being based on the fact that oats when sprouted increase their bulk four or five times. But as stated by the Maine Station sprouted oats are not a feed but a stimulant. Ten years ago the writer fed them in the winter to hens with remarkable success. The hens were so eager for them that they would venture out on the snow during severe weather with the mercury near the zero mark, greedily devouring every particle of the sweet succulent material, and then would repay for the little trouble of preparing the oats with an abundance of eggs at a time when the daily market price of eggs was 50 cents a dozen the cities.

### POULTRY ITEMS

The Guinea fowl is growing in favor as a market bird, the flesh coming near to the flavor of game than any of our domestic poultry.

All kind of fowls, which include ducks and geese, are fond of the common field pumpkins, and they are good for them. It is best, however, to feed them cooked and mixed with soft feed.

Poultrymen generally count on a shrinkage of a half pound on a carcass. In other words, a two and a half pound chicken would dress about two pounds.

Authorities claim that the eggs from a hen will be fertile for ten days after the removal of the cock birds from the flocks.

If the hen will not pay for her board in eggs, why she should be made to yield a profit by being slaughtered and her carcass sold. No poultryman should keep drones; he cannot afford it.

New York City is the great broiler market of the east, and Chicago holds a similar position in the west. The famous "Philadelphia broilers" are not a product of that city, but instead are grown in South Jersey.

In charging an incubator with eggs, they should be all of uniform size and color. The brown shells are thicker than the white shells and therefore demand different treatment. Moisture or ventilation sufficient for the one class would not do for the other. This is the cause of many failures.

The condition of the bowels is the best indication of the fowl's health. When the droppings are more or less hard, of a dark brown color, capped with white, we know the fowls are enjoying the best of health. But when



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Please Mention This Paper.

THE BLUE-RIBBON POULTRY FARM

C. H. Ahrens, Prop. - - - - - Box 427 Fargo, N. D.



they are watery and yellow, indigestion, if not liver troubles, are the causes.

An old time theory said that hens without the attention of a male would lay as well, but not be so apt to become broody, as those mated. Our records show they will lay as well, but unmated flocks are not broody-proof by any means. The past season our unmated birds with a few exceptions, became broody first, while two-year old hens were the last to show any signs.

White clover hay is the richest in lime. Feeding clover is a preventive of soft-shelled eggs. Cut clover hay has helped revolutionize the poultry business. Red clover hay contains about twenty-eight pounds of lime to the thousand pounds. Scald the clover hay at night, and keep it covered, so it can steam. See that the clover is cut to

one-half inch lengths. When longer it is apt to pack in the crop, causing crop-bound.

In England quite a demand is annually created for cross-bred fowls by the poultrymen there advertising such, showing that they are of a more hardy nature, and that as meat and egg-producers they excel the bird in its purity. Until a few years ago, on account of fanciers sacrificing the utility points of the breeds to gain high scoring fowls, it looked as if a similar step had to be taken in this country. But the fanciers are more careful now, and we believe that better and more hardy stock is being grown. Today the fancier makes it a point to advertise the utility qualifications of his breeds, and the thoroughbred is not only as hardy but as prolific as any crossbred could ever boast of.

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AMERICAN POULTRY is a magazine devoted entirely to helping earnest men and women make a financial success of poultry raising. Its staff of writers is composed entirely of those who have made a practical, instead of theoretical, success of poultry farming, and who are glad to pass on the results of their hard-earned experience to AMERICAN POULTRY readers.

There are many pit-falls in the path of the novice which may be entirely avoided by those who will follow the teachings set forth in this magazine. It fully explains how to make a start, how to construct houses, coops, and other devices, how to get a large egg yield, how to cure and prevent disease, how to exhibit, how to get the top price for eggs, how to use incubators and hundreds of other points which everyone wishes to know. It explains the famous secret system through which poultrymen have become rich and afterwards sold for hundreds of dollars.

AMERICAN POULTRY is a large, handsomely illustrated, monthly journal, well printed on fine paper, and should be found on file in the home of every poultry lover. No beginner in the poultry business should think of being without it. It will save him many times the small subscription price. The advanced poultryman will also find it of great value; the articles being varied in their scope.

**SPECIAL OFFER.** The regular price of AMERICAN POULTRY is 50c per year, but in order to introduce it to several thousand new readers, we will, for a short time, give a large 200 page poultry book, which is a complete guide in the poultry business, *absolutely free* to everyone sending 50c for a yearly subscription or \$1.00 for a three year subscription to AMERICAN POULTRY. A trial six months' subscription (without book) will be sent for 25c. Never has so much been offered for so small a sum. Advantage of this offer should be taken at once.

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## School and Home

### ELEMENTARY AGRICULTURE

Miss Ura Leader,  
Ruraldale, N. D.

Dear Miss Leader:

When this letter reaches you, you will perhaps be all thru with the December work on legumes and root crops, yet perchance a few suggestions may be useful in some way. You were authorized by the course of study to gather many specimens including those of leguminous crops during the month of September. Undoubtedly you have these on hand. They are dry and brittle now, yet if handled very carefully they may serve an important purpose.

There are altogether too many boys and girls in North Dakota who do not even know a red clover plant when they see it, who are unable to detect the difference between white clover and alsike, or between alfalfa and sweet clover. Therefore, the mere looking at these serves to familiarize boys and girls with them, even tho no very definite features be pointed out. Red clover, you are aware, is what is known as a biennial, that is, the seed is sown one year with a nurse crop (I mean some other crop such as wheat, oats or barley) the little plants making a fair start with the so-called nurse crop. The second year they constitute the main crop and if the stand or catch is good, these plants should come on in abundance, furnishing a good hay crop to be harvested early in July. A second crop should come on the same year, in which the seed is found, or which may be cut for hay along in September. The plants may live over until the following year but it is best not to put much dependence in them after this second year; hence the term biennial, as red clover is really a two-year crop. This habit of red clover makes it fit most admirably into a crop rotation system.

White clover is a small plant well adapted for lawn purposes and also for pasture, as the little white clover plants fit in between the larger clusters of timothy or brome grass or whatever other grass may constitute the main pasture crop.

White clover seems to last indefinitely providing the moisture is sufficient. It is not, however, a good drouth resister.

Alsike clover is taller than medium red. The stems are also more slender. It has a beautiful variegated blossom. This variety was originated in Sweden and is best adapted to low land or wet places, hence not so much in evidence in North Dakota.

Undoubtedly the best legume for most localities of this state is alfalfa. Alfalfa unlike red clover is a perennial, that is, the plants live in the ground from year to year. There are fields in this state ten and twelve years old. Nobody knows just how long a field of these plants will live. It is customary here to sow alfalfa without a nurse crop, that is, the ground should be well prepared, in excellent tilth, and in a good state of fertility. Then, with every weed killed and the surface in nice mellow and moist condition the alfalfa seed should be sown, either broadcast or in drills, sometime during the month of June. Usually no crop is harvested the first year. The second year it will come on nicely and two to three crops may be harvested according to the amount of moisture in the ground each succeeding year. Alfalfa, however, is not so good a rotation crop as red clover. It stands drouth better, however, and consequently is a better yielder. The hay made from any of the legumes is superior, especially for cow feeding, to any other kind of hay. This is due to the fact that it contains much nitrogen. Nitrogen is the element in the proteid foods and as you are aware has to do with the building of bone, lean meat and the giving of strength.

Peas and beans are also legumes. You have, of course, noticed and pointed out to your pupils that all of these plants have the same kind of a blossom, that is, they all resemble the pea or bean flower. One of the most striking peculiarities of all the legume plants is that they leave the soil richer in nitrogen than they found it even tho the hay made from these plants contains much of that element. This is due to the fact that a little organism lives on their roots which has the peculiar power or faculty of taking up air nitrogen and changing it so as to be fit for plant food. All the plants, of course, must have their regular rations of their kind of food in

order to live and grow. One food very prominent in this list is nitrogen.

North Dakota gives good promise of being a great potato producing area. Both soil and climatic conditions seems to be suitable for potato production. The demand is growing every year for northern grown potatoes both for table and seed purposes. The school boys and girls have taken up potato growing in industrial contest work in many counties of this state. The variety that seems to be most in favor is the Early Ohio, altho the Carmen, Early Trimuph, Irish Cobbler, Rural New Yorker, Pingree, and others are more or less in evidence. Potato seed should be healthy, that is, free from scab, dry rot, etc., should be cut in sections and planted in a deep-plowed, well-prepared soil, usually in the month of May. A potato field should receive much subsequent cultivation, that is, it should be harrowed several times after planting and before the young plants appear, after which intertillage should be practiced until the plants are quite full grown. As potato bugs appear they should be destroyed. The best method is to poison them with Paris Green solution. In the fall they should be stored in a dry, cool, fairly well ventilated place. The cultivation of potatoes is a profitable industry because our rich loamy soil yields fairly well and as I explained the market is good for a North Dakota product. Then again the cultivation necessary for potatoes puts the ground in excellent condition for a subsequent wheat crop. Therefore, potato growing in North Dakota is profitable.

What is true of potatoes in this respect is also true of other root crops, such as mangle-wurtzels, turnips, rutabagas, cow carrots, etc. In the growing of all of these intense cultivation is necessary. They, therefore, fit the ground well for future use. All of these root crops have great value for the feeding of livestock, not altogether for the food value they contain but for the medicinal effect they have upon the animals' system.

With your eighth grade class, do not forget to emphasize the December lessons. All animals should be well and regularly fed. The farm boy who neglects dumb animals is not fulfilling his place as a good citizen. The farm boy who neglects to protest against cold, filthy and uncomfortable barns for all classes of livestock, is missing an opportunity to have an influence for good, not only with his father but with the neighbors as well. All farm out-buildings should be clean, ventilated, with stalls well-bedded and in every possible way made to add to the



comfort of the animals living in them. This will not only keep the horses, cattle, pigs, or sheep free from disease but will also make them contented and consequently they will do better with less feed than in cold, uncomfortable, unsanitary surroundings.

I believe, Miss Leader, you can teach your boys no better lesson than that of properly fitting of harness for work horses. Too many horses work in collars too long, hence bringing the draft too low on the point of the shoulder, or too wide, bringing the pressure on the outer part of the shoulder, sometimes causing sweeney, and often, oh how often, working with shoulders galled, stiff and sore. How often again do we see dumb animals tied to a hitching post in the village on a cold blustering winter afternoon, there to stand, hour after hour, while their owner loafs away the time around the comfortable store stove. Again in summer time faithful horses, ready at any time to do their master's bidding, suffering all sorts of torments from flies and other insects driving them half frantic.

The teacher who succeeds in bringing about a realization of these undesirable conditions and a desire to bring better and more comfortable conditions to the farm animals has taught a most valuable and profitable and humane lesson.

### JANUARY LETTER

Miss Ura Leader,  
Ruraldale, N. D.

Dear Miss Leader:

Since you have indicated a willingness to receive, and in some cases make use of, my suggestions on the lessons in agriculture, I shall proceed with a few hints on the January outline.

There are quite a number of diseases of plants, and here again I may say we see the likeness between plant and animal life, as plants must have food and water and air and sunshine like animals, so in turn they are subject to the ravages of disease. Some of those most prevalent among the crops in this state are smut, rust, potato scab, black point in wheat, root rot in wheat, wilt in flax, ergot in rye, etc. Some of these may be treated successfully by the use of a sort of medicine, while others cannot be handled in this way.

If smut is found in the seed of wheat or any other grain it should be given the so-called formaldehyde treatment. This consists in mixing one pound or one pint of 45% formaldehyde with about 45 gallons of water. The grain then may be sprinkled

thoroly with this or may be placed in sacks and the sacks dipped in the solution and then allowed to drain. If seed potatoes are to be treated for scab the solution should be made somewhat stronger, say one pound of formaldehyde to 30 or 35 gallons of water. The potatoes are then submerged in this solution for a period of one hour or more, after which the seed may be cut and is ready for planting. This, however, only kills the spores or germs of the disease in the seed. If other spores are loitering in the ground, then the disease is sure to attack the plants of the growing crop. Therefore it is necessary to have both seed and seed bed free from these disease spores. A double process is therefore necessary. First, treat the seed, killing the disease germs; second, plant the seed on ground in which the disease spores do not occur. This can only be done by a system of crop rotation. That is, if ground has grown wheat and is full of wheat smut spores a crop of potatoes or corn or alfalfa may be planted there without danger because the spores of these diseases will not attack the crops just mentioned.

What is true of plant diseases is equally true of insect enemies. For instance, a field may be infested with Hessian fly, a wheat enemy, but if planted to corn the Hessian fly do not find a plant upon which they can feed and consequently must starve or move on—the former is apt to be the case. Therefore a system of crop rotation is very beneficial to agriculture from the standpoint of both plant diseases and insect enemies. You and your associates in the rural schools of North Dakota are receiving an annual salary of between two and two and one-half millions of dollars, I believe. While the state is contributing what might seem like a large amount to your support it at the same time is contributing a very much larger sum to the support of insects. It is reported that the annual loss of North Dakota farmers to insect enemies alone is approximately six million dollars. Therefore for every dollar the tax payers turn over for teaching in the country schools of the state they are paying more than three dollars toward the support of injurious insects. As a rural school teacher, therefore, it behooves you to teach the boys especially the magnitude of the toll taken yearly from their farms by these pests and to teach them further that the only good remedy lies in a thoroly system of crop rotation. No piece of land can produce one crop, as wheat, year after year, without any break, without those same conditions inviting diseases, insects and weeds as well—all

of which demand and take an extremely heavy toll. I will not discuss this topic further at this time but urge you again to get possession of the various references mentioned in the course of study, and after securing them make the very best possible use of the same.

Now, in regard to the eighth grade work for the month of January, I will say that dairying is undoubtedly receiving more attention at the hands of the farmers of late than any other one agricultural topic. The State of North Dakota seems to be peculiarly adapted to the dairying business. Wherever individual farmers or communities have taken up dairying they have rapidly become prosperous. I will therefore suggest that you give considerable attention to this subject with your winter eighth grade class.

In the selection of the dairy herd some would say start with pure bred animals. This, however, would be very expensive and would be a source of discouragement to many. I would therefore say that the best producing cows among common stock will prove very satisfactory if they are properly housed, properly fed and properly cared for in every way. You know, of course, that there is always a great variation in the producing ability of cows as well as other kinds of variation in all forms of nature. One cow, for instance, will give milk ten months out of the year, while another will but seven. One cow will produce an abundance of rich milk, while another, equally well fed and cared for, will give a smaller amount of inferior milk. Therefore the farmer should learn to select those animals which

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"The House That Pays Millions for Quality."



vary in the right direction, that is, the ones giving a large amount of high grade milk for the longest possible time.

This variation can only be determined thru the use of the Babcock milk tester. I would advise you, therefore, as a progressive and moving spirit in your community to look up this matter of milk and cream testing. Raise money by some means to fit out your school with a Babcock testing outfit. Then secure samples of milk from the various farms and from the various individual cows and teach the boys and girls as well to make this test in the school room. Any intelligent boy or girl, 10 or 12 years old, can learn to make this test. It will reveal a good many interesting facts and will probably do more towards arousing an interest in dairying and turning the attention of the patrons toward the school than any other one thing you can possibly do. In connection with the Babcock tester the farmer or the farmer's son should learn to use the weighing scale. The milk should be weighed and a sample of it tested. The percentage shown by the Babcock tester multiplied into the weight of milk in pounds determines the amount of butterfat, and as butterfat is the marketable portion of the cow's product the one that will yield the greatest amount of this is the profitable one to keep.

In the teaching of dairying it will be necessary for you to be plain and frank in discussing the matter of cleanliness. Here, as perhaps nowhere else, strict cleanliness is necessary to success. The farmer or farmer's wife who keeps milk or any of its products in unclean dishes can never produce a good product and is doing an injustice to those people to whom the product is sold. All utensils should be kept scrupulously clean. It is the business of the school to teach such things. You know there are many forms of so-called bacteria or small live organisms that find their way into milk. Some are necessary and some are unnecessary and undesirable. One, the lactic acid form is necessary in order to make milk sour. Others that give milk unpleasant tastes and odors are entirely unnecessary and undesirable. They can only be kept out by keeping all utensils absolutely clean. A thoro scalding of utensils will kill these bacterial forms. A thoro airing in the open sunlight is also advantageous.

I consider this subject of dairying one of the very important ones in the year's outline. Be sure you give it much attention. Think about it. Study it. Get all the information you can from every possible source and by

all means I should say secure the Babcock testing outfit. Learn to make use of it. Teach it to your boys and girls. Have them bring samples, if possible, from every cow in the district. By this means get the people of your district interested in dairying and when you shall have accomplished this you will have rendered one of the best possible services to the district and community in which you work.

I shall look forward with pleasure to an opportunity of writing you next month on the subjects of horses and seed germination.

Yours very truly,  
GORDON W. RANDLETT.

## NOW TO MAKE BABCOCK TEST

G. L. Martin. N. D. A. C.

(Eighth Year—Fifth Month)

The percentage of butterfat is made the basis for determining the market value of nearly all kinds of dairy products and is calculated by the Babcock test. In acquiring a knowledge in the manipulation of this test the student will need to practice extreme accuracy.

**Taking the Samples.** The butterfat exists in milk in minute globules, which float about in the milk and are brought to the top by the action of gravity. The milk and cream must be thoroly mixed with a stirring rod or by pouring from one container to another before taking the sample to test. A small dipper or sampling tube will serve in taking the sample.

A **composite** sample is one made up from milk delivered at different times or from different cans, and should give an average test for the period or for the total amount of milk. Care is necessary to take a proportionate amount from each can in order to get a representative test of the whole amount.

**Preserving Samples.** In case the samples cannot be tested immediately, they may be kept from souring by using chemicals. The preservatives in common use are corrosive sublimate and bi-chromate of potash. These are put up in convenient tablets of sufficient strength that one or two will preserve a pint of milk for several weeks. The tablets are very poisonous and so are colored red and yellow respectively, as a safeguard against accidents.

**Churned Milk.** It often happens that milk will become partially churned in transit, especially if the container is not completely filled, and the butterfat will gather in lumps. When this occurs, it is well to warm the milk to about 100 degrees F., and

hold it there until the lumps of fat are melted and then mix thoroly by pouring before taking the sample to test.

**Frozen Milk.** The water in milk and cream will freeze first, which forces the solids toward the center of the can. In order to get a representative sample, all frozen portions must be thawed out and then the entire contents of the can must be thoroly mixed before taking the sample to test.

**Sour Milk.** The casein in milk coagulates on souring and tends to incorporate the fat globules, which often makes it difficult to secure an accurate sample. In case the sample becomes sour, a small quantity of alkali added to the milk will dissolve the casein sufficiently to enable an accurate sample to be taken.

## Operation of the Babcock Test

**Object.** To determine the percentage of butterfat in dairy products.

**Apparatus.** Samples to be tested, two whole milk bottles, 17.6 c. c. pipette acid measure, beaker or cup, tester, acid and water.

**Steps.** 1. Number the bottles (1) and (2).

2. Mix the samples well by pouring from one beaker to another; then measure into each bottle with the pipette 17.5 c. c. of the milk.

3. Add 17.5 c. c. of sulfuric acid to each bottle and mix well by rotary motion until all of the curd is thoroly digested.

4. Put the bottles into the tester and whirl at full speed for two minutes. It may be necessary to whirl longer.

5. Add hot water to each until the butterfat rises to the neck of the bottle.

6. Whirl again at full speed for two minutes.

7. Add hot water until the butterfat rises half way up the neck of the bottle; then whirl one minute and read the test.

**Reading the Test.** The whole milk test is read from the extremes of the top meniscus to the bottom of the fat column.

The cream test is read from the bottom of the top meniscus or curve to the bottom of the fat column.

## Data:

| Sample | Test | Butter-fat | Value |
|--------|------|------------|-------|
| 1      |      |            |       |

**Application.** 1. How much butterfat will be obtained in one year from a cow giving 5000 pounds of milk testing as in above data?

2. What will be the cash value of the butterfat at current prices per pound?



3. Why pour the sample back and forth before taking the sample to test?
4. Why whirl the tester at full speed?

## OFFICIAL PROGRAM

### TRI-STATE GRAIN AND STOCK GROWERS' ASSOCIATION

J. H. Worst, President, T. A. Hovestad, Secretary.

Fifteenth Annual Convention, held in Auditorium, Fargo, N. D., January 20, 21, 22, 23, 1914. All meetings will begin promptly at the moment announced.

#### Tuesday

##### Morning Session

10:00 Invocation—Rev. A. E. Peterson, Pastor Baptist Church, Fargo.

Music, Agricultural College "Y" Quartette

10:10-10:30 Address of Welcome, J. P. Hardy, Secretary Commercial Club.

10:30-10:50 Agriculture in Secondary Schools—Charles Hammond, Instructor in Agriculture, Minot Normal School.

10:50-11:20 Dairying in Connection with Grain Growing, John Christiansen, Farmer, New Salem, N. D.

11:20-11:40 Home Economics in Secondary Schools, Miss Mae Hooper, Instructor in Home Economics, Valley City High School.

11:40-12:00

#### 12:00 Appointment of Committees

##### Afternoon Session

1:00-1:30 Meeting of North Dakota Horticultural Society

I Elements of Success in Small Fruit Growing, A. Brackett, Excelsior, Minn.

II. Getting a Fruit Orchard Started, C. A. Chinberg, Hankinson, N. D.

III. Five Best Trees and Five Best Shrubs for North Dakota, Ernest C. Hilborn, Valley City, N. D.

IV. Horticultural Progress in the Northwest in the Last Twenty-five Years, A. Brackett, Excelsior, Minn.

##### Evening Session

7:30-8:00 Miscellaneous

8:00-8:30 How to Manage Soils Inclined to Blow, J. E. Eastgate, Farmers' Institute, Larimore, N. D.

8:30-8:50 Alfalfa—J. G. Haney, Grand Forks, N. D.

8:50-9:20 Microbes, Chancellor J. M. Walters, D. D. Pastor First Methodist Church, Fargo, N. D.

9:20 The Necessity and Benefits of Organization Among Farmers Oliver Wilson, Master of National Grange, Peoria, Ill.

#### Wednesday

##### Meeting of State Conservation Association

Governor L. B. Hanna, President, Dean A. F. Woods, Minnesota School of Agriculture, Secretary.

#### Morning Session

8:30-9:00 Miscellaneous.

9:00-9:30 Organization of Agricultural Education and Co-operative Work in the Interest of the Farmer, Dean A. F. Woods. Briquetting of Lignite Coal and Its Commercial Possibilities, Hon. L. M. Davis, Minot, N. D.

Clays of North Dakota and Their Use for the Manufacture of Pressed Brick, Hon. Ferd Leutz, Hebron, N. D. Coals and Clays of North Dakota, Professor Earle J. Babcock, University of North Dakota.

##### Afternoon Session

1:30

Use of Flax Straw for Paper Making, Hon. J. Dexter Pierce, Larimore, N. D.

Address, Governor L. B. Hanna Address, Mr. George W. Cooly, Good Roads Expert, Minnesota

Conservation of Health as to the Prevention of Tuberculosis, Mr. J. E. Stevens, Grand Forks, N. D.

Additional speakers will be provided for Conservation Day.

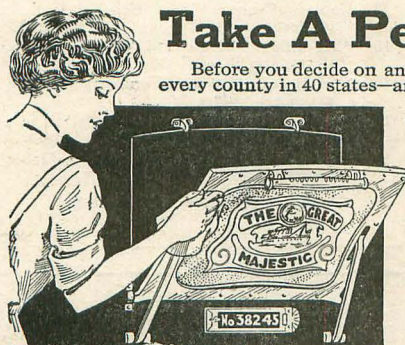
##### Evening Session

7:30-8:00 Miscellaneous

Music, Agricultural College, "Y" Quartette

8:00-8:45 Team Play, Dr. George E. Vincent, President University of Minnesota.

8:45 President's Annual Address



## Take A Peep Into A Majestic Oven

Before you decide on any range go to the nearest *Majestic* dealer—there's one in nearly every county in 40 states—and let him show you the perfect *Majestic* oven.

Because the *Majestic* is put together with *rievts* so that all joints and seams remain absolutely air-tight always—because the body is lined with guaranteed *pure asbestos board*, covered with an iron grate—you can see it—you are sure of an even, *dependable* baking heat with *half* the fuel required in ordinary ranges.

This is only one of the many reasons why you will select a

## Great Majestic Malleable and Charcoal Iron Range

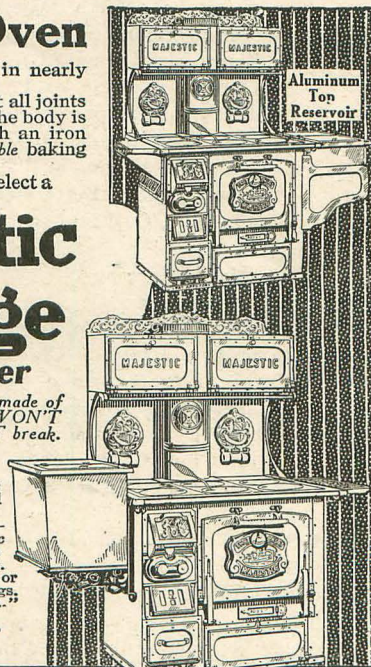
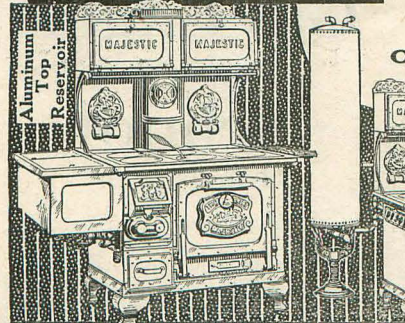
### A Perfect Baker—Fuel Saver

Outwears Three Ordinary Ranges—ONLY range made of malleable iron and charcoal iron. Charcoal iron WON'T RUST LIKE STEEL—malleable iron CAN'T break.

#### All Copper Reservoir

Its 15-gallon reservoir is all copper and heats through copper pocket, pressed from one piece, setting against fire box. Turn lever and it is instantly moved away from the fire. Greatest improvement ever put in a range—increasing strength and wear of a *Majestic* 300 per cent at a point where other ranges are weakest—many other exclusive features. Any *Majestic* dealer can furnish any size or style *Majestic* Range with or without legs. Write today for booklet, "Range Comparison."

Majestic Manufacturing Co.  
Dept. 194 St. Louis, Mo.



## The Range With a Reputation—It Should Be In Your Kitchen



**Livestock Day****Thursday****Morning Session**

I. Livestock in Its Relation to Profitable Farming, Thomas Cooper, Director North Dakota Experiment Station

II. Scientific Dairying Made Practical, A. J. McGuire, Superintendent North Central Experiment Station, Grand Rapids, Minn.

III. Some of the Essentials in Successful Horse-Breeding, W. L. Houser, Breeder of Clydesdale and Percheron Horses, Mondovi, Wis.

**Afternoon Session**

I. Stability in Northwestern Agriculture, M. F. Greeley, Editor Dakota Farmer, Aberdeen, S. D.

II. Experiences in Raising Feeding Cattle, Frank Sanford, Valley City, N. D.

III. Beef Production in the Northwest, H. R. Smith, Professor Animal Husbandry, Minnesota College of Agriculture.

IV. Dual Purpose Shorthorns in England and America, Professor Thomas Shaw, St. Paul, Minn.

Annual Banquet and Business Meeting of the North Dakota Livestock Association, Thursday Evening, January 23, 1914.

**Evening Session**

7:30-8:00 Miscellaneous

8:00-8:40 Some Social and Industrial Problems in North Dakota, Dr. F. L. McVey, President University of North Dakota.

8:40-9:20 County Demonstration Work in Farm Management, J. C. McDowell, Division of Farm Management, Dept. of Agriculture, Washington, D. C.

9:20 The Social and Economic Value of Country Life Betterment, Governor A. O. Eberhart, St. Paul, Minn.

**Friday Morning**

8:30-9:00 Miscellaneous

9:00-9:30 Report of Committee on Farm Organization, Clarence Hennis, Department of Farm Management, Secretary

9:30-10:00 Report of Committee on Rural Credits, President F. L. McVey, University of North Dakota

10:00-10:30 Election of Officers

10:30-11:00 Report of Committee on Resolutions

11:00-11:30 Co-operation of Growers and Seedsmen in the Cause of Seed Betterment, F. O. Olsen, Fargo, N. D.

11:30-12:00 Seed Improvement and

H. L. Bolley, N. D. A. C.

Afternoon Session

1:30 American Society of Equity

**HOW TO WARM WRAPPED BREAD**

Many persons who are fond of freshly baked and even warm baker's bread have, it seems, been opposing the modern sanitary method of having all bread wrapped and sealed cold and not handled by clerks or exposed to dust, flies, germs and filth on counters or in wagons. The Bureau of Chemistry of the Department of Agriculture regards the wrapping of bread as so important that it has caused the Plant Chemistry Laboratory to make a series of experiments to determine whether those who like fresh or warm bread cannot get what they want in wrapped form. Bread fresh from the oven if wrapped while warm becomes moist and clammy and of unpleasant flavor. Loaves therefore must be allowed to cool thoroly before being wrapped. After some experiment, the experts found that if a cold wrapped loaf is unwrapped and placed in a pan in the oven in good medium heat for ten minutes, it will be as good as fresh, crisp without and tender within, and, at the same time will be free from any pollution it might have gained if conveyed unprotected from baker to consumer. The Bureau believes that if lovers of warm bread will try this plan, they too will become ardent advocates of the clean, wrapped method of purveying bread.

**NORTH DAKOTA IMPROVED SEED GROWERS' CONTEST**

The second Annual North Dakota Improved Seed Growers' Contest is billed for Jan. 20th to 24th, the week

of the Corn Show and Tri-State Grain Growers Convention at Fargo. We have arranged to make this one of the biggest contests in pure seed growing ever conducted.

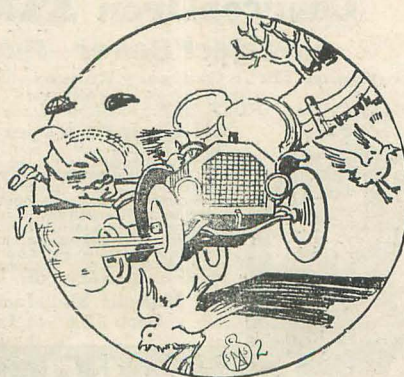
Prizes are fine. The show will be held in one of the largest buildings in Fargo and there will be First, Second and Third Prizes on all varieties of cereal grains, corn, potatoes, forage and garden seeds. Several of these prizes reach a cash value of over \$100. There are fine pieces of farm

**BIGGEST BARGAIN EVER OFFERED**

in mail order business for beginners and others.

- 1—The address of three firms who will print your circulars (your own copy) free
- 2—Address of firm who will print your letter heads free.
- 3—How you can get envelopes (your return card printed) free.
- 4—Address of 50 or 100 firms who want commission circulars mailed.
- 5—Ten firms who furnish you free imprint circulars. (Your name printed on them).
- 6—A big combination of several hundred papers and magazines, in which you can insert your ad. at very low cost.
- 7—Copy of the "Monthly Mail" for you, The Great Exchange Story Mailorder Magazine and Mailing Directory.
- 8—List of 500 reliable circular mailers with whom you can exchange and who will help you secure business.
- 9—Copies of The Mechanical Digest, The Booster Magazine, Advertising World, Mail Order Journal, Agents' Magazine, Circular Magazine, Advertising World, Mail Order Journal, Agents' Magazine, Circular Mailers' Digest, Mail Order Advocate, Mail Order Herald and several other good mail order papers. These alone worth \$3.00.
- 10—The address of seven syndicates in which you can start publishing a magazine of your own for \$1.00.
- 11—Names of 50 small papers which insert your ad. for a few cents and you mail 100 copies.
- 12—One thousand of our assorted commission circulars which should pay you not less than \$10 to \$50.
- 13—Three hundred names of people who sent us 25c. each.
- 14—Copies of hundreds of circulars and small papers.
- 15—"My Book", "How You Can Make \$50 or Better Per Week." Price \$1.
- 16—The names of 20 firms who pay me cash for mailing circulars
- 17—How you can have your ad. inserted in publications at less than publisher's price.
- 18—All the above and much more valuable information for only 25c.

Address Melvin C. Churchill  
Houston, Texas.



A REAL  
**Gas Engine**  
APPRENTICESHIP  
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FARGO, N. D.

"Gas Tractor and Auto Schools"

Three months' courses, second term. Beginning Jan. 1 and 15th. Write for particulars.

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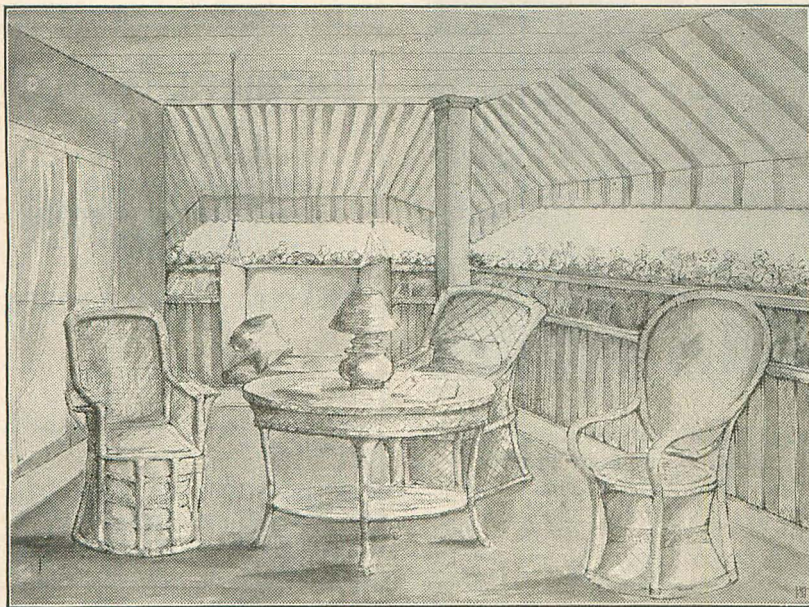


machinery, such as corn cultivators, fanning mills, field sprayers, garden machinery, etc.

The Contest is open to every grower in North Dakota. No entry fee. All samples should be shipped by express

First there arises the thought of cost. It is an expensive luxury but well worth the amount put into it. As to heating the enclosed porch, the best way is to use the same heat that is used all over the house. If you

The most charming way to heat an enclosed porch is with an open-fire. If a chimney runs up in the wall against which the porch is placed, it is not very difficult or very expensive to cut into it and have a brick or stone mantle built over the fire-place. The most expensive part of this way of heating an enclosed porch is the maintenance of the fire. In most places wood is far from cheap and the fire requires constant attention to keep it going. If none of these methods of heating can be managed, an ordinary coal-oil stove is almost as effective and very cheap.



"What a difference is made by the screened porch"

or parcel post as so to reach the pure seed laboratory by January 13th. Send one peck of any of the cereals (small grains), 10 ears of corn, 10 best potatoes, one-half peck of any forage or grass seeds. In the home-grown garden seed contest from one-fourth ounce to one pint may be entered according to kind, such as lettuce, peas, onion, beans, etc. In the vegetable gardening select plant contest—one best individual for each variety, as carrot, onion, parsnip, celery, etc. (This should represent the sender's ideal of the best type form from which to grow seed.

Complete premium list and entry blanks mailed on request. Address  
H. L. BOLLEY, Sec.-Treas.  
Agri. Col P. O., N. D.

#### AN ENCLOSED PORCH

On almost every house nowadays there is a screened porch. The joy and comfort to be got from this cool, bug-proof addition to the house is so great that, whenever it is within means of a householder, it is now a part of the home.

Everyone knows what a difference is made in the family life by the screened porch, but comparatively few of us have become equally conscious of the pleasure to be got by enclosing the screened porch in glass for the winter.

have a hot air furnace, an extra pipe can be run thru the porch floor. If steam or hot water is used, a radiator can be placed on the porch. The piping is not expensive and the same boiler that is in use, can stand the addition of one heater.

#### A CHEERFUL, ATTRACTIVE HOME

Everybody likes a cheerful, attractive home, and why not have it when the help of a trained decorator is at your command.

Send the Small House Decorating Co. \$1.00 for each room you want to fix up and we will send you ideas for color and samples of material with information as to where the stuffs can be bought and at what price.

Write at once and get the full advantage of the latest fall materials.

Anything you want to know about fixing up your home ask

**SMALL HOUSE DECORATING CO.**

No. 7 Liberty St.,  
New York City, N. Y.

## DON'T BE DEFRAUDED -GET THE GENUINE



The great popularity and the heavy demand for the famous Martha Washington Comfort Shoes made only by the F. Mayer Boot & Shoe Co. of Milwaukee, have caused dishonest dealers to sell cheap and inferior imitations to their customers when the genuine Martha Washington was wanted and asked for.

**Mayer** Martha  
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Comfort Shoes

Slip them on and off at will—elastic at the sides insures perfect fit and free action of the foot. Get rest, relief and comfort.

The Mayer trade mark and the name "Martha Washington" are on the sole. If you do not find these marks, you are being defrauded. If your dealer cannot supply you, write to us.

F. MAYER BOOT & SHOE CO., Milwaukee



HONOR BILT





The chairs and table on the porch should be covered with bright, cheerful creton. There should be a good reading lamp on the table in case the porch is used for an evening sitting room.

A swinging canvas couch with some comfortable, sofa cushions in it and a warm bright blanket at one end is a great addition.

There should be flowers growing on an enclosed porch. It should have a little of the appearance of a conservatory where people as well as flowers are allowed to flourish in warmth and sunshine even when it is bitterly cold outside.

Ivy grows well on a porch. It will climb up the posts and can be trained to meet between so that it gives the effect of arches. Geraniums are good growers on an enclosed porch. They are hardy and willing and can stand an extraordinary amount of cold.

A bird seems naturally to be part of an enclosed porch, a canary or a parrot, and there is on market now the loveliest bird cage made of wicker with a little pointed roof. This cage would be very desirable if you used wicker furniture.

Whatever is cheery, whatever is bright, whatever is homelike belongs on the enclosed porch.

The above picture will be helpful in furnishing such a porch. The decoration can be followed as a whole or suggestions can be taken from it with regard to any separate detail.

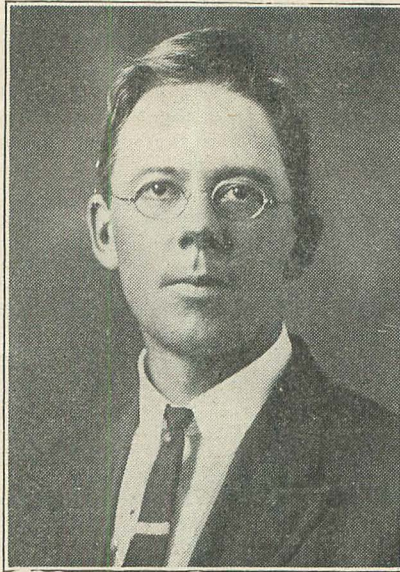
#### THE INTERNAL COMBUSTION ENGINE

It is becoming almost a necessity for young men of the present (especially upon the farm), to familiarize themselves with the internal combustion engine, such as is used in gas tractor, auto, and farm motors.

As a matter of fact the companies producing these different machines are increasing their products each year at a startling rate. We are upon the verge of a great Gas Engine era. Gas tractors and automobiles are certainly destined to occupy the major position that the horse has so long and so faithfully filled.

A young man of today who is starting in life must prepare himself to meet conditions as he finds them. It is not possible for all young men to prepare themselves for professional careers; and if this were possible there would not be professions enough to go round. On the other hand, there is unbounded opportunity on the American farm.

For instance, we have on many of our farms of today a large tractor



Supt. L. R. Van Volkenberg of  
Y. M. C. A. Gas Tractor  
and Auto School

representing from three to four thousand dollars. The carburetor may be in perfect condition, giving a perfect

mixture of fuel and air. The valves and pistons may be in perfect condition; also cranks, cams, gears, etc.; and yet without the tiny electrical spark, which ignites the fuel, this machine is no more than a pile of junk iron. Now let a man who un-

## Farmers, Notice!

**100 lbs.**

FRESH FROZEN

**Lake Superior Herring**

**\$3.50**

**Pickrel, 7 cents a pound**

Special price on large lots. Money order with order. Our reference: U. S. National Bank, Superior, Wis. We guarantee our fish.

LAKE SUPERIOR FISH CO.

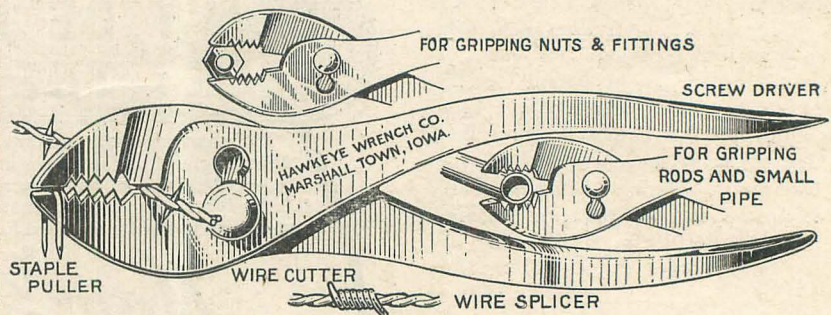
811-813-815 Baxter Av.

SUPERIOR - - WISCONSIN

## No Handier Tool Was Ever Invented

For the home or on the farm. Note the different uses. The identical tool you pay 50 cents for at the hardware.

### Do You Want It?



|                                  |         |        |
|----------------------------------|---------|--------|
| North Dakota Farmer, Three Years | .. .. . | \$1.50 |
| Six-inch Nickel Plated Pliers    | .. .. . | .50    |

**\$2.00**

North Dakota Farmer Three Years and Pliers, Only **\$1.00**

THE PLIERS WILL BE SENT POSTPAID.

Note: If preferred a pair of self-sharpening shears will be substituted.

**North Dakota Farmer**

LISBON,

NORTH DAKOTA



derstands ignition take this mass in hand, let him adjust coils, magneto, and spark plugs, so that the spark occurs at the proper time, and this large mass of inert material immediately becomes an animated, untiring servant of man which is almost human in operation.

The writer has been called into the field many times in his past experience at very large expense and loss of time to owners of these machines; and in the course of over ten years, has never been called on a serious case of trouble. It is always some little thing, which is very simple for the man who knows and is very easily learned by any one who has the proper training. To make this clear we will take an example. Were you, while running a gas tractor, to lose off a drive wheel you would in all probability discover this fact inside of thirty minutes; however, if you should break one small wire in the electrical devices inside of the covering it is quite probable you would have to send for an expert. Which is the easiest to repair, a broken wire or a broken drive wheel? This illustrates the difference between simple and serious troubles.

Today at Beach, N. D. inside a radius of 40 miles there are nearly six hundred tractors in operation. This shows something of the marvelous advancement of the gas tractors.

Just stop and think, during the five years to come how many men will be needed to operate and repair these machines.

## THE AGRICULTURAL COLLEGE

Pres. J. H. Worst

An agricultural college and all its departments are dominated solely by the spirit of service. It has a legitimate mission and that mission is one of service. Its financial needs are based upon its desire to perform its legitimate work with candor and in amount proportioned to the demands of the people of the state, especially those interested directly in agriculture. The Agricultural College management has no desire to make a needless show or to build up a great institution for the sake of being great or of being the greatest educational institution of the state. Its work is unselfish. Its aim is to do missionary work in the rural homes because such work is needed;

because it will benefit agriculture directly and all other state interests indirectly, for banking, professional, transportation, and merchandising interests all depend upon the size and certainty of yields per acre and the profitableness of the livestock that is purchased or bred. Moreover, to induce farmers to select the best seed for sowing, rotate their crops and engage more largely in different kinds of animal husbandry is one of the biggest things to be accomplished. It is all a needful and unselfish work and legitimately belongs to the Agricultural College. The education of the young people desirous of this type of education is by no means any more incumbent upon the College than many forms of Extension work, such as above alluded to. All this requires money—not the least amount that will make a show of keeping up appearances or to secure the Agricultural College's share of state funds as compared with the other state institutions, but the amount that is needed to do its work efficiently and for the best interests of the state.

As long as all state interests depend upon the prosperity of its farmers, it would seem the part of good judgment to encourage the farming class, as money expended for agricultural education and extension work gives promise of making large and permanent returns in proportion to the amount of money expended. While I am confident that the Agricultural College has a money value of millions of dollars every year—actual money value, mind you—yet it is painfully evident that this fact cuts but little figure when it comes to securing appropriations for buildings and maintenance. The money appropriated should be in proportion to the task that is assigned to this institution; to the work it should accomplish for the general prosperity of the state and for the conservation of its natural resources. The other state educational institutions are deserving of precisely the same consideration.

In addition to this, much more attention must be given to rural sociology. It is not enough that farmers be encouraged to produce larger crops. They must also be encouraged to co-operate in order to share equitably in the legitimate profits that should naturally follow larger crops. The farm home must be the seat of real enjoyment. The country must provide the things necessary to make country life desirable. The larger returns from better farm management should be enjoyed by the farmer and his family and not by those whose chief mission in life is to farm the farmer.

It is patent that much of the concern manifested for the farmer's welfare is to enable those who profit by his prosperity to reap still larger returns by helping to augment the volume of products that may be divided—sixty per cent to go to middlemen and forty per cent to be returned to the farmer.

If farmers would co-operate and pay more attention to the business end of farming they might readily reverse the program and themselves enjoy the sixty per cent instead of being handed the short end of the deal. By so doing half the drudgery for the farm home could be eliminated, and the farmer still be money ahead.


The mission of the Agricultural College, therefore, cannot be divorced from these great problems. Agricultural education comprises the whole scheme of rural life and not simply to enable the farmer to produce large crops. Larger crops are only incidental. When agricultural education comes into its own, justice will occupy a higher plane than now. Moreover, it will come into its own when farmers take hold of the business and political affairs of the country somewhat in proportion to their numbers and their vested interests—Agricultural education contemplates the farmer as a citizen, not as a peasant.

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## Bargains In Farms

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## Seasonable Receipts



### A FEW CHRISTMAS CANDIES

#### Nut Candy

Take a plate, well-buttered, and spread on it about half a pint of hickorynut kernels; then take a pint of maple molasses; boil it till it becomes thick, and try it by dropping some in cold water. When it hardens in the water, pour it over the kernels and stir up quick.

#### Cocoanut Candy

Two teacups of white sugar, one-half teacup of sweet cream, butter the size of a walnut. Let it boil fifteen minutes; then stir in as much cocoanut as you think best; flavor to taste.

#### Seafoam

Two cups white sugar, one-half cup water, one-half cup corn syrup (Karo) Boil till it hardens when dropped in cold water. Pour this syrup over the beaten whites of two eggs and beat thoroly. Add one cup walnuts and pour into a butter pan.

#### Chocolate Caramels

Two cups sugar (white,) one cup corn syrup (Karo), one-half cup cream, three squares chocolate, one tablespoon butter, one tablespoon vanilla. Boil till it hardens in cold water, but not too brittle. Nut may be added.

#### Penoche

Three cups brown sugar, one cup milk and cream, butter size of a walnut. Boil until a little dropped in water makes a soft ball. Add 10 cents' worth marshmallows and stir until dissolved. Add 10 cents' worth walnuts. Cool.

#### Butterscotch

Two cups brown sugar, one-half cup butter, four tablespoons corn syrup, two tablespoons vinegar, two tablespoons cold water. Boil till crisp in cold water. Pour in thin sheet on a tin to cool.

### Plain Pie-Crust

Work one cup lard, or lard and butter together, into three cups flour, to which has been added one teaspoonful salt; add enough cold water to make a stiff dough; turn dough on floured paste board, sprinkle with flour, and roll out; spread thickly with butter, sprinkle with flour, fold three-ply, and roll again; repeat three times (or a few times more, if a puffy crust is desired), spreading with butter each time. This makes enough crust for two large pies,

### Rice Pudding Without Eggs

Wash one-half teacupful rice, and stir, with a little less than a teacupful sugar, the same quantity of raisins, and a teaspoonful of cinnamon or allspice, into two quarts milk; bake rather slowly from two to three hours; stir two or three times the first hour of baking.

### Fruit Spice Cake

One cup sugar; one cup molasses; two-thirds cup butter; one cup sour milk; three cups flour; three eggs; one teaspoonful each of soda, nutmeg, and cloves. (Mix soda with molasses and sour milk.) One-half teaspoonful cinnamon; one-half cupful citron, chopped one cupful each of raisins and currants.

### Cinnamon Bread

One egg, four scant tablespoons melted butter, one-half cup of milk. Sift one cup of flour with three level teaspoons baking powder, one-half cup of sugar, one scant dessert spoon of cinnamon, pinch of salt. Bake in gem tins or shallow pan.

### Egg Rolls

From bread dough, after making quite stiff, take one pint; add three or four eggs, one-half cup butter, one-halfcup sugar, one-half teaspoon cinnamon, flour to make a soft dough. Set in a cool place until night, then make into small rolls and let rise till morning.

### Steamed Brown Bread

One cup sweet milk, one cup sour milk, one cup molasses, one cup English currants, one cup cornmeal, one cup graham flour, one cup wheat flour, one egg, one teaspoon each of soda and salt; steam three hours.

### Good Cake

One cup sugar, one-half cup butter, one cup sour milk, two cups flour, two eggs, one teaspoon soda, one tablespoon baking powder, one tea-

spoon cinnamon, two teaspoons cocoa or chocolate.

### Raised Doughnuts

Bring two cups new milk to the boiling point. Remove from fire, add two heaping tablespoons butter and when luke-warm add one gill of yeast. Stir in enough flour to make a soft batter, then cover and set in a warm place over night. Next morning beat up three eggs very light with small cup sugar. Mix thoroly with the batter and add flour enough to make a soft dough, not as stiff as for bread. Cover again, and when light roll on floured board. Cut out; let rise again, and fry in deep fat.

### Steamed Cranberry Pudding

Two-thirds cup sugar, one cup milk, one egg, one tablespoon butter, two teaspoons baking powder, flour to make a stiff batter. Cream, sugar, butter and eggs; add milk, sift in flour and baking powder. Stir in one pint cranberries. Put in covered dish and steam three hours. Serve with liquid sauce.

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The solid part of Paint (Strictly Pure White Lead, Strictly Pure Zinc, and, in some Paints, baser metals) acts as beautifier only.

Strictly Pure Zinc absorbs more Oil than any other pigment and that is the reason for its use in Horse Shoe Paint. WHITE LEAD is used for its covering qualities, and ZINC for its *Oil-carrying* capacity.

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Horse Shoe Paint, while it covers and beautifies the surface thoroughly, is made of pigments that carry so much oil, that the *first* coat satisfies the oil-hunger of the wood leaving the second coat to gloss, harden, protect, and beautify.

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